CONSEIL PERMANENT INTERNATIONAL POUR
L'EXPLORATION DE LA MER
CHARLOTTENLUND SLOT — DANEMARK

RAPPORTS
ET
PROCÈS-VERBAUX DES RÉUNIONS

VOLUME CXXXVIII

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2ÈME PARTIE
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QUARANTE-DEUXIÈME RÉUNION

PARIS, OCTOBRE 1954

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Directeur de l'Institut de Recherches Maritimes;
Rue Vautier, 31, Bruxelles.

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Technicien au Service de la Pêche Maritime;
Zuidstraat 16, Ostende.

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Alcalá 27, Madrid.

M. le Dr. JUAN CUESTA URCELAY;
Directeur du Laboratoire Océanographique;
Puerto Chico, Santander.

Finlande:

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Institut pour l'Exploration de la Mer;
Helsingfors.

*M. le Professeur E. HALME;
Directeur de l'Institut Scientifique des Pêches;
Helsingfors.

*M. le Dr. S. SEGERSTRÅLE;
Institut zoologique de l'Université;
Norra Järnvägsgatan 13, Helsingfors. (Suppléant)

* Empêché d'assister à la réunion.

France:

M. le Dr. LE GORGEU;
Vice-Président du Conseil d'Administration de l'Institut Scientifique et Technique des Pêches Maritimes;
59, Avenue Raymond-Poincaré, Paris.
M. A. ALLOY;
Directeur des Pêches Maritimes au Ministère des Travaux Publics, des Transports, du Logement et de la Reconstruction (Marine Marchande);
3, Place de Fontenoy, Paris. (Suppléant)
M. le Dr. JEAN FURNESTIN;
Directeur de l'Institut Scientifique et Technique des Pêches Maritimes;
59, Avenue Raymond-Poincaré, Paris.

Grande Bretagne:

M. A.T. A. DOBSON, C.B., C.V.O., C.B.E.; [1])
Fisheries Adviser, Ministry of Agriculture and Fisheries;
The Elms, Walsham-le-Willows,
Bury St. Edmunds, Suffolk.
M. le Dr. C. E. LUCAS, F.R.S.E.;
Director, Marine Laboratory;
Aberdeen.

Irlande:

M. ARTHUR E. J. WENT, D. Sc., Ph. D., A.R.C.S.;
Inspector of Fisheries and Scientific Adviser;
Department of Agriculture, Fisheries Branch;
3, Kildare Place, Dublin.

Islande:

M. DAVIÐ ÓLAFSSON;
Directeur des Pêches, Fiskifélag Islands;
Reykjavik.

M. JÓN JÓNSSON, Mag. sc.;
The University, Research Institute, Fisheries Department;
Borgartún 7, Reykjavik.

Norvège:

M. le Professeur H. U. SVERDRUP, Ph. D., Ll. D.;
Norsk Polarinstitutt;
Oslo.
M. GUNNAR ROLLEFSEN;
Directeur de l'Institut pour l'Exploration de la Mer;
Bergen.

Pays-Bas:

M. G. J. LIENESCH;
Directeur des Pêches;
Wassenaarseweg 18, 's-Gravenhage.
M. le Dr. B. HAVINGA;
Directeur de l'Institut Royal pour l'Exploration de la Mer, Oost Indisch Huis;
Amsterdam.

Portugal:

M. le Dr. ALFREDO S. M. DE M. RAMALHO;
Directeur de "Instituto de Biologia Marítima";
Cais do Sodré, Lisboa.
*M. le Professeur FERNANDO FRADE;
Directeur du "Centro de Zoologia, Junta de Investigações do Ultramar";
Rua da Junqueira, 14, Lisboa.

Suède:

M. le Dr. JÖRAN HULT;
Chef du Département des Pêches;
Göteborg.
*M. le Dr. B. KULLENBERG;
Institut d'Océanographie;
Stigbergstorget 8, Göteborg.

[1]) At the Paris Meeting Mr. A. T. A. DOBSON (under an amendment of the Rules) ceased as from 1. November 1954 to be a British Delegate and was succeeded as such from that date, by Mr. R. G. R. WALL (Fisheries Secretary, England and Wales).

EXPERTS:

Allemagne (République Fédérale d'):

VON BRANDT, M. le Dr. A., Oberregierungsrat; Direktor des Instituts für Netz- und Materialforschung der Bundesanstalt für Fischerei, *Neuer Wall 70/74, Hamburg 36.*

BÜCKMANN, M. le Professeur, Dr. A.; Direktor der Biologischen Anstalt Helgoland; Institut für Fischereibiologie der Universität, *Holstenwall 24, Hamburg 36.*

DIETRICH, M. le Dr. G.; Deutsches Hydrographisches Institut, *Bernhard-Nocht-Strasse 78, Hamburg 4.*

KÄNDLER, M. le Professeur, Dr. R.; Institut für Meereskunde der Universität Kiel, *Hohenbergstr. 2, Kiel.*

KREY, M. le Professeur, Dr. J.; Institut für Meereskunde der Universität Kiel, *Hohenbergstrasse 2, Kiel.*

LUNDBECK, M. le Professeur, Dr. J.; Direktor des Instituts für Seefischerei der Bundesanstalt für Fischerei, *Neuer Wall 70/74, Hamburg 36.*

MEYER-WAARDEN, M. le Dr. P.-F., Oberregierungsrat; Direktor des Instituts für Küsten- und Binnenfischerei der Bundesanstalt für Fischerei, *Neuer Wall 72, Hamburg 36.*

SCHÄRFE, M. le Dr. Joachim; Institut für Netz- und Materialforschung der Bundesanstalt für Fischerei, *Neuer Wall 70/74, Hamburg 36.*

* Empêché d'assister à la réunion.

Danemark:

Bertelsen, M. le Dr. E.; Chef de Section, Danmarks Fiskeri- og Havundersøgelser, *Charlottenlund Slot.*

Hermann, M. F., Cand. mag.; Chef de Section, Danmarks Fiskeri- og Havundersøgelser, *Charlottenlund Slot.*

Jensen, M. le Dr. Aage J. C.; Chef de Section, Danmarks Fiskeri- og Havundersøgelser, *Charlottenlund Slot.*

Schreiber, M. A., Fishery Attaché, *Bern.*

Ursin, M. E., Cand. mag.; Danmarks Fiskeri- og Havundersøgelser, *Charlottenlund Slot.*

Espagne:

*Andreu, M. B.; Director del Laboratorio Atlantico del Instituto de Investigaciónes Pesqueras, *Aranda 66, Vigo.*

Arté, M. P.; Laboratorio Atlantico del Instituto de Investigaciónes Pesqueras, *Aranda 66, Vigo.*

Ferragut, M. A.; Laboratorio Atlantico del Instituto de Investigaciónes Pesqueras, *Aranda 66, Vigo.*

Navaz, M. J. M.; Director del Laboratorio, Instituto Español de Oceanografía, *Palacio del Mar, Acuario, San Sebastián.*

Finlande:

Lisitzin, Mme le Dr. Eugénie; Institut pour l'Exploration de la Mer, *Observatoriegatan 2, Helsingfors.*

France:

Ancellin, M. le Dr. J.; Chef de Laboratoire à l'Institut Scientifique et Technique des Pêches Maritimes, *Boulogne-sur-Mer.*

Bertin, M. le Dr. L.; Professeur au Muséum National d'Histoire Naturelle, *57, Rue Cuvier, Paris.*

Bouxin, M. le Dr. H.; Sous-Directeur de Laboratoire au Collège de France, *Rue Saint-Jacques, Paris.*

Cadenat, M. le Dr. J.; Directeur de la Station Biologique de *Gorée, A. O. F.*

Coupé, M. R.; Institut des Pêches Maritimes, *Casablanca, Maroc.*

Desbrosses, M. P.; Inspecteur Général, Chef du Service des Recherches à l'Institut Scientifique et Technique des Pêches Maritimes, *59, Avenue Raymond-Poincaré, Paris.*

Dieuzeide, M. le Dr. R.; Directeur de la Station Expérimentale d'Aquiculture et de Pêche, *Castiglione, Algérie.*

*Drach, M. le Dr. P.; Professeur à la Faculté des Sciences, *1, Rue Victor Cousin, Paris.*

Dyèvre, M. l'Ingénieur Général H.; Directeur du Service Hydrographique de la Marine, *13, Rue de l'Université, Paris.*

Fage, M. le Dr. L.; Membre de l'Institut, Professeur au Muséum d'Histoire Naturelle, *61, Rue de Buffon, Paris.*

Faure, M. L.; Chef de Laboratoire à l'Institut Scientifique et Technique des Pêches Maritimes, *Roscoff.*

* Empêché d'assister à la réunion.

Fontaine, M. le Dr. M.; Professeur au Muséum d'Histoire Naturelle, *57, Rue Cuvier, Paris.*

Gougenheim, M. A.; Ingénieur Hydrographe en Chef, Service Hydrographique de la Marine, *13, Rue de l'Université, Paris.*

*Letaconnoux, M. R.; Chef de Laboratoire à l'Institut Scientifique et Technique des Pêches Maritimes, *La Rochelle.*

Pérès, M. le Dr. J. M.; Directeur de la Station Marine *d'Endoume.*

Petit, M. le Dr. G.; Directeur du Laboratoire Arago, *Banyuls-sur-Mer.*

*Prenant, M. le Dr. M.; Professeur à la Faculté des Sciences, *1, Rue Victor Cousin, Paris.*

Ranson, M. le Dr. G.; Sous-Directeur au Muséum d'Histoire Naturelle, *61, Rue de Buffon, Paris.*

Teissier, M. le Dr. G.; Professeur à la Faculté des Sciences de Paris, Directeur de la Station de Biologie Marine de *Roscoff.*

Vibert, M. R.; Ingénieur des Eaux & Forêts, Adjoint au Chef du Service des Recherches Piscicoles au Ministère de l'Agriculture, *Paris.*

Vivier, M. R.; Conservateur des Eaux & Forêts, Chef du Service des Recherches Piscicoles au Ministère de l'Agriculture, *Paris.*

Grande Bretagne:

England.

Beverton, Mr. R. J. H., M. A.; Fisheries Laboratory, *Lowestoft.*

Carruthers, Dr. J. N., F. Inst. P.; Assistant Director, National Institute of Oceanography, *Wormley, Near Godalming, Surrey.*

Cole, Dr. H. A.; Fisheries Laboratory, *Burnham-on-Crouch, Essex.*

Hodgson, Dr. W. C.; Fisheries Laboratory, *Lowestoft.*

Lumby, Lt.-Commander J. R.; Fisheries Laboratory, *Lowestoft.*

Pentelow, Mr. F. T. K., M. A.; Ministry of Agriculture and Fisheries, *3, Whitehall Place, London, S.W. 1.*

Steven, Dr. G. A., F.R.S.E.; Marine Biological Association, *Citadel Hill, Plymouth.*

Swain, Mr. A., B. Sc.; Ministry of Agriculture and Fisheries, *3, Whitehall Place, London, S. W. 1.*

Wall, Mr. R. G. R.; Fisheries Secretary, England and Wales, Ministry of Agriculture and Fisheries, *3, Whitehall Place, London, S.W. 1.*

Wimpenny, Mr. R. S., M. Sc.; Fisheries Laboratory, *Lowestoft.*

Scotland.

McIntyre, Mr. A. D., B. Sc.; Marine Laboratory, *Aberdeen.*

Millar, Dr. R. H.; Marine Station, *Millport, Isle of Cumbrae.*

Parrish, Mr. B. B., B. Sc.; Marine Laboratory, *Aberdeen.*

Tait, Dr. J. B., F. R. S. E.; Marine Laboratory, *Aberdeen.*

Wood, Dr. H., F. R. S. E.; Deputy Director, Marine Laboratory, *Aberdeen.*

Islande:

EINARSSON, M. le Dr. HERMANN; The University, Research Institute, Fisheries Department, *Reykjavik.*

STEFÁNSSON, M. U., Mag. sc.; The University, Research Institute, Fisheries Department, *Reykjavik.*

Norvège:

AASEN, M. OLAV; Institut pour l'Exploration de la Mer, *Bergen, p.t. Istamboul.*

ANGERMAN, M. H.; Chef de Bureau, Section de Statistiques à la Direction des Pêches, *Bergen.*

BERGERSEN, Son Excellence, M. le Ministre BIRGER; *Oslo.*

BRAARUD, M. le Professeur T.; Laboratoire Biologique, l'Université, *Blindern, Oslo.*

DANNEVIG, M. GUNNAR; Institut pour l'Exploration de la Mer, *Bergen.*

DEVOLD, M. FINN; Institut pour l'Exploration de la Mer, *Bergen.*

EGGVIN, M. le Dr. JENS; Institut pour l'Exploration de la Mer, *Bergen.*

FØYN, M. le Dr. ERNST; Laboratoire Biologique, *Frederiksgate 3, Oslo.*

GERHARDSEN, M. le Professeur G. M.; Norges Handelshøgskole, *Bergen.*

LEA, M. E.; *Frederiksgate 3, Oslo.*

MOSBY, M. le Professeur H.; Institut Géophysique, *Bergen.*

RASMUSSEN, M. BIRGER; Institut pour l'Exploration de la Mer, *Bergen.*

ROSSELAND, M. LEIV; Statens Forsøksvirksomhet for Ferskvannsfisk, Den Vitenskapelige Avdeling, *Sarsgaten 1, Oslo.*

RUUD, M. le Professeur JOHAN T.; Statens Institutt for Hvalforskning, *Frederiksgate 3, Oslo.*

SELLÆG, M. JOHS.; Département des Pêches, *Oslo.*

WIBORG, M. KR. FR.; Institut pour l'Exploration de la Mer, *Bergen.*

Pays-Bas:

BAERENDS, M. le Professeur G. P.; *Reitemakersreijge 14, Groningen.*

KORRINGA, M. le Dr. P.; *Halsterseweg E 176, Bergen op Zoom.*

TERMIJTELEN, M. l'Amiral J. W.; Kon. Ned. Met. Instituut, *de Bilt.*

Portugal:

VILELA, M. H. Z.; Instituto di Biologia Marítima, *Cais do Sodré, Lisboa.*

Suède:

*ALM, M. le Dr. G.; Institut des Pêches d'Eaux Douces, *Drottningholm.*

CARLIN, M. le Dr. B.; *Lustigknoppsvägen 1, Falun.*

HESSLE, M. le Dr. CHR.; Département des Pêches, *Postfack 2126, Göteborg.*

HÖGLUND, M. le Dr. H.; Laboratoire des Pêches Maritimes, *Lysekil.*

KOCZY, M. le Dr. F. F.; Département des Pêches, *Stigbergstorget 8, Göteborg.*

SAHLIN, M. S., Fil. lic.; Département des Pêches, *Postfack 2126, Göteborg.*

SÖRENSEN, M. S. I. K., Fil. lic.; Laboratoire des Pêches Maritimes, *Lysekil.*

OBSERVATEURS:

Permanent Commission of the International Fisheries Convention of 1946:—
M. R. G. R. WALL, President; Office of the Permanent Commission, *3, Whitehall Place, London, S. W. 1.*

International Whaling Commission, London:—
M. G. J. LIENESCH; Directeur des Pêches, *'s-Gravenhage.*

Food and Agriculture Organization of the United Nations.
Fisheries Division, Roma:—
M. le Dr. G. L. KESTEVEN; Chief, Fisheries Biology Branch, *Viale delle Terme di Caracalla, Roma.*
General Fisheries Council for the Mediterranean: –
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Indo-Pacific Fisheries Council, Bangkok:—
M. le Dr. G. L. KESTEVEN; Chief, Fisheries Biology Branch, *Viale delle Terme di Caracalla, Roma.*
*M. le Dr. CECIL MILES, Secretary; Indo-Pacific Fisheries Council, *Bangkok.*

* Empêché d'assister à la réunion.

International Commission for the Northwest Atlantic Fisheries, Canada:—
M. A. T. A. DOBSON, C. B., C. V. O., C. B. E.; Fisheries Adviser, Ministry of Agriculture and Fisheries; *The Elms, Walsham-le-Willows, Bury St. Edmunds, Suffolk.*
M. le Directeur G. ROLLEFSEN; Institut pour l'Exploration de la Mer, *Bergen.*
M. le Dr. ERIK M. POULSEN, Executive Secretary; *Forrest Building, Carleton Street, Halifax, Nova Scotia, Canada.*

Commission Internationale pour l'Exploration de la Mer Méditerrranée:—
M. l'Ambassadeur SOLA, Président; *59, Avenue Raymond-Poincaré, Paris.*

U.S. Fish and Wildlife Service:—
M. le Dr. HERBERT W. GRAHAM; Chief, North Atlantic Fishery Investigation, *Woods Hole, Mass. U.S.A.*

Woods Hole Oceanographic Institution:—
M. HARRY J. TURNER, Jr.; Marine Biologist, *Woods Hole, Mass., U. S. A.*

Fisheries Research Board of Canada: –
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M. le Dr. WILFRED TEMPLEMAN; Director of the St. John's Biological Station, *St. John's, Canada, N.F.*
Australian Scientific Liaison Office, London:—
M. W. IVES; Chief Scientific Liaison Officer, *Africa House, Kingsway, London, W. C. 2.*
Poland:—
M. le Dr. W. CIEGLEWICZ; Morski Instytut Rybacki, *Gdynia, Poland.*

U S.S.R.:—
M. le Dr. G. IJEVSKY; Director, All Union Institute of Maritime Fishery and Oceanography, *V. Krasnoskelskaja 17, Moskow, U.S.S.R.*
M. le Dr. V. A. LEDNEV: Institut de l'Océanographie de l'Administration Centrale du Service Hydro-Météorologique de l'U.R.S.S., *Kropotkin per. 6, Moskow, U.S.S.R.*
M. le Prof. LEON ZENKEVITCH; Institut d'Océanographie de l'Académie de Science, *Platz de Miussi, Moskow, U.S.S.R.*

HÔTES:

M. ROBERT S. DIETZ; p. t. Scientific Liaison Officer, Embassy of the United States of America, Office of the Naval Attaché, Office of Naval Research, *429, Oxford Street, London, W. 1.*
M. THOMAS ENGLISH; School of Fisheries, *Seattle 5, U.S.A.*, p.t. Institut pour l'Exploration de la Mer, *Bergen.*
M. THIÉBLEMONT COLSON; *Carnac, Morbihan, France.*
M. le Dr. H. G. VEVERS; Marine Biological Association, *Citadel Hill, Plymouth.*
M. le Professeur C. M. YONGE, F. R. S.; Zoology Department, The University, *Glasgow, W. 2.*
M. le Dr. KARL REICH; Department of Zoology, Hebrew University, *Jerusalem.*

BUREAU CENTRAL:

Charlottenlund Slot, Charlottenlund, Danemark.

Secrétaire Général:

M. ÁRNI FRIÐRIKSSON.

Personnel du Secrétariat:

Service d'Administration: Mlle E. HEDEGAARD.
Service de Publications: Mme H. HARDER,
Mlle M. HÄNSCHELL.
Service Statistique: Mlle E. CHRISTIANSEN.
Service Hydrographique:
M. J. SMED, Mag. scient. et Cand. mag., Hydrographe,
Mme P. HOLM, Mme H. HARRIS,
Mme I. BONDORFF, M. P. ALNØE.

AGENDA

for the forty-second Meeting of the International Council for the Exploration of the Sea.
Paris, 4th—12th October, 1954.

A. General Assembly: Opening Meeting.

1. Welcome and Opening Address by the President.
2. Outline of the Programme of the Meeting.
3. Presentation of Administrative Report.
4. Report on Permanent Commission.
5. Report on International Whaling Commission.
6. Report on International Commission for the Northwest Atlantic Fisheries.
7. Address by a F. A. O. Representative.

B. Meeting of Delegates.

8. Opening of the Proceedings by the President.
9. Presentation of Estimated Statement of Accounts for 1953-54.
10. Final Approval of the Accounts for 1952-53.
11. Adoption of the Administrative Report.
12. Appointment of an *ad hoc* Committee to propose Candidates for the Election of President, First Vice-President and three Vice-Presidents.
13. Election of President, First Vice-President and three Vice-Presidents.
14. Amendment of the Rules.
15. Consideration of the Consultative Committee's Recommendations approved by the Bureau.
16. Estimate for the Financial Year 1954-1955.
17. Nomination of Finance Committee Members and Editors.
18. Other Business.

C. General Assembly: Final Meeting.

19. Opening of the Proceedings by the President (including Budget Summary).
20. Presentation of Recommendations adopted by the Council.
21. Time and Place for next Council Meeting.
22. Other Business.
23. Conclusion of the Meeting.

1ÈRE PARTIE

PROCÈS-VERBAUX

REPORT

of

THE FORTY-SECOND MEETING OF THE COUNCIL

General Assembly, Opening Meeting, Monday, 4. October 1954, at 10.00 a.m.

Agenda, Point 1. The President opened the meeting and said:—

"Mesdames et Messieurs,

Je pense, que nous pouvons maintenant ouvrir la quarante-deuxième réunion du Conseil International pour l'Exploration de la Mer. L'Agenda se trouve devant vous sur la table.— Comme aux occasions précédentes, je voudrais dire quelques mots en français pour rendre honneur à nos amis français.

Nous sommes très heureux de pouvoir à nouveau après plusieures années tenir notre réunion à Paris. Je souhaite à tous une cordiale bienvenue en exprimant l'espoir, que vous trouverez des solutions satisfaisantes de vos problèmes."

The President then called upon M. CHABAN-DELMAS (Ministre des Travaux Publics, du Logement et de la Reconstruction), who spoke as follows:—

"Mesdames, Messieurs,

Je suis heureux, au nom du Gouvernement de la République française, d'accueillir les membres du Bureau, les Délégués et les experts du Conseil International pour l'Exploration de la Mer. Si vous me permettez une confidence personnelle, je suis d'autant plus heureux de vous accueillir que je le fais ici dans cet amphithéâtre que j'ai fréquenté, il y a maintenant de nombreuses années, et je vous souhaite lorsque vous reviendrez plus tard dans cette salle, car j'espère bien que vous y reviendrez, que vous n'en ayez pas, comme moi-même, conservé des souvenirs qui n'étaient pas toujours bons.

Nous sommes enchantés, nous Français, d'accueillir votre Conseil à Paris. Il y a plus de vingt ans que semblable honneur et semblable joie nous ont été donnés.

Les rencontres à Paris de cet organisme qui est le vôtre, sont en effet très espacées puisque vous vous réunissez normalement au Danemark, ce pays magnifique qui, comme l'on dit en terme hippique, tient la corde pour tout ce qui touche à la science maritime. Ce n'est en effet que tous les trois ans que vous vous réunissez dans un autre pays.

Vous êtes partis — et malgré la fuite du temps et le nombre d'années qui pèsent sur mes épaules, je n'étais pas encore de ce monde, — vous êtes partis de considérations techniques de la pêche, de la constatation de certains faits déplorables il y a maintenant plus de cinquante ans, et vous avez été amenés à passer d'un empirisme parfaitement respectable à des recherches scientifiques de plus en plus poussées. Vous avez abordé d'abord dans vos études les questions de physique, puis de chimie et vous vous êtes penchés sur la biologie des poissons des mers, de sorte que maintenant grâce à vos progrès scientifiques, vous avez la possibilité d'apporter à nouveau des lumières parfaitement indispensables et de plus en plus aveuglantes dans ce domaine scientifique. On parle de lumières aveuglantes en français d'une manière assez inattendue puisque, par définition, aveuglante veut dire voir doublement.

Je suis donc très heureux de vous accueillir. Je sais que vous allez centrer vos travaux sur des sujets essentiels pour l'avenir de la pêche, aussi bien sur les côtes d'Europe que sur celles de l'Afrique. Vous allez étudier plus spécialement le marquage des harengs, la mytiliculture et l'ostréiculture. Enfin, vous allez être entraînés maintenant à faire des recherches et des confrontations qui ne manqueront pas de vous amener à des conclusions positives. Si l'on en juge par les résultats obtenus par votre Conseil depuis plus de cinquante ans, on peut attendre de cette réunion des progrès sérieux qui feront faire un pas immense dans le domaine de la science.

Soyez donc remerciés d'avoir bien voulu vous réunir à Paris; j'en remercie particulièrement le

Président, et je suis sûr, en vous souhaitant un bon travail, de vous souhaiter en même temps un agréable séjour à Paris."

The President thanked the Minister heartily for his kind words and for having honoured the opening meeting with his presence.

The President then called upon M. L'Ambassadeur Sola (Président de la Commission Internationale pour l'Exploration de la Mer Méditerranée), who spoke as follows:—

"Comme Président de la Commission Internationale pour l'Exploration de la Méditerranée, je désire apporter notre représentation à cette Assemblée, et je souhaite que les rapports entre le Conseil de la Mer de Copenhague et de la Commission de la Méditerranée soient toujours les plus étroits et les plus agréables.

Nous aussi regrettons vivement la perte du Professeur Le Gall qui a été le Secrétaire Général de notre Commission. Le Professeur Le Gall a été remplacé, à titre provisoire, par M. Furnestin, mais personnellement je souhaite qu'il y reste très longtemps. M. Furnestin a pris l'initiative de l'immédiate publication de tous les travaux qui, dans les années passées, s'étaient un peu accumulés et que nous allons publier maintenant de nouveau. C'est une preuve et une possibilité de collaboration entre nos deux stations, puisqu'il va sans dire que tous nos travaux seront mis à votre disposition.

Je vous remercie, Monsieur le Président, de m'avoir concédé l'honneur de parler et je porte un toast aux membres du Bureau, à l'Assemblée, experts et conseillers auxquels j'adresse nos salutations dévouées."

The meeting then decided to send the following telegrams to His Majesty the King of Denmark, the President of the French Republic, the Council's Honorary President, Dr. K. A. Andersson and to Madame Le Gall:—

"A Sa Majesté le Roi de Danemark,

Les membres du Conseil International pour l'Exploration de la Mer réunis en Assemblé plenière à Paris demandent la permission de témoigner à Votre Majesté leurs sentiments les plus respectueux.

Alban Dobson,
Président."

"A Monsieur le Président de la République Française,

Les membres du Conseil International pour l'Exploration de la Mer, réunis à Paris à l'occasion de sa quarante-deuxième conférence statutaire adressent a Monsieur le Président l'expression de leurs sentiments les plus respectueux.

Alban Dobson,
Président."

"To Dr. K. A. Andersson,

The members of the International Council for the Exploration of the Sea send affectionate greetings and sincere wishes to their Honorary President.

Alban Dobson,
President."

"A Madame Le Gall,

Les membres du Conseil International pour l'Exploration de la Mer, réunis à Paris à l'occasion de sa quarante-deuxième conférence statutaire, conscients des inestimables services rendus à la science par le regretté Professeur Le Gall, adressent à Madame Le Gall l'expression de leur profonde sympathie.

Alban Dobson,
Président."

The President mentioned the retired delegates: Professor T. H. Järvi and Mr. Friðriksson and welcomed the new delegates: M. le Dr. Le Gorgeu and M. le Dr. Jean Furnestin, France; Professor Ch. Gilis, Belgium; Dr. C. E. Lucas, Scotland; Mr. Jón Jónsson, Iceland and Professor E. Halme, Finland, with Dr. Sven Segerstråle as his personel substitute. The President also welcomed observers and guests, and mentioned the several international organizations with which the Council co-operated and which were represented by their Chairmen and Vice-Chairmen. He was very pleased to see a representative from Poland.

The President then turned to the losses which the Council had suffered by the death of Dr. Tesch, Professor Risto Jurva, Dr. Russell and Professor Le Gall, and said:—

"Death has taken a heavy toll of our friends since the last meeting.

Dr. Tesch will not be known to many of the younger scientists attending this meeting. I fancy the last meeting he attended was that in Berlin in 1939. But the older scientists will recall with gratitude the scientific work he did. But Tesch was I think more than a scientist, he was a poet too, surely a rare combination.

Then there was Risto Jurva, of Finland, a man of many varied attainments. Beginning as a meteorologist, he then entered The Institute of Marine Research and specialized in ice. He was the Director in 1947 and remained so until his death in December 1953. He was also a seismologist and was head of the seismic station at Helsinki for many years. Our sympathy goes out to our Finnish friends on the loss of so distinguished a scientist.

E. S. Russell was for many years a beacon in the International Council. I perhaps have known him longer than anyone, because I was in the Fisheries Department, when he joined as a young and outstanding scientist, who did not fail to make his mark on the world of marine research at a very early age. He was at an early age made Director of Fisheries Research in England Wales, and his contributions to the literature on the subject are too well known to be recorded here. As Chairman of the Consultative Committee he rendered outstanding service to the Council and no man had more friends. The work that he has left behind testify to his originality of thought.

Finally the death of our friend Jean Le Gall inevitably throws some gloom over this Paris reunion.

He was the Council's First Vice-President and might reasonably have expected to have succeeded on this occasion to the Presidency. His services to marine research have been well described in the *Journal du Conseil* and we are grateful to our friend DESBROSSES for saying so much that was in our minds. I remember LE GALL primarily as a member of the Bureau, where his services became more and more indispensable as the years went on. His colleagues on the Bureau viewed him with a deep affection, and our sympathy goes out in particular to his French colleagues who have lost so fearless a leader.

Let us stand for a moment."

The Assembly stood in silence as a tribute.

Agenda, Point 2. The President called on Dr. FURNESTIN who said a few words about entertainments during the week.

Agenda, Point 3. The President drew attention to the Administrative Report which he would ask the Delegates to approve later in the Delegates Meeting.

Agenda, Point 4. The President then called upon the Chairman of the Permanent Commission and Mr. WALL spoke as follows:—

"At the last meeting of this Council, Mr. President, at which I was privileged to speak of the work of the Permanent Commission, we had not advanced very far, for the Commission had done no more than hold its first meeting and was not then even one year old.

Between your last meeting and this present one, the Permanent Commission have held two further meetings and it seems to me the more appropriate to report on what we have done, as the Liaison Committee which you have been good enough to set up to act between the International Council and the Permanent Commission has played a most prominent and helpful part in our affairs.

The first thing I should like to say is that the Federal Republic of Germany has now acceded to the Convention of 1946 and the Permanent Commission will warmly welcome its representatives as full members at our next meeting in May 1955. The accession of Western Germany means that the Commission now comprises all the seaboard countries of Northern and Western Europe from Norway and Iceland in the north, and including Poland on the Baltic, as far as Spain and Portugal in the south. This is itself a solid foundation and a good omen.

When I spoke here last year, I said that the Permanent Commission had already decided to bring into force from April 1954, in all the member countries the new sizes of mesh of nets and the new size-limits for fish landed and sold which were prescribed in the Convention of 1946.

These prescriptions were duly brought into effect at that date with certain modifications for trawl nets in the North Sea and adjacent waters and for seine nets through the Convention area. The altered mesh sizes of seine nets were agreed in the Commission as a result of the advice of this Council as to the varying selectivity of seine and trawl nets—a very practical matter in which science has effectively guided fisheries management. You are also to advise us in the Commission on the selectivity of light trawls in comparison with the heavy trawl.

Another important question in which we have had most valuable help and guidance from the Liaison Committee is that of industrial fisheries and the particular problem of the herring and whiting fishery for animal feed which is pursued in the North Sea. The study of this problem which you undertook for us greatly assisted the Commission to come to an agreed conclusion at their last meeting whereby the Convention of 1946 has now been amended to allow of the taking of undersized fish of protected species such as the whiting in an industrial fishery up to 10 % by weight of the individual catches. We have also agreed, however, that this arrangement should be reviewed within two years in consultation with the International Council.

There is yet another field in which we are looking for your assistance, and that is in the matter of fishery statistics for the Convention area. The recommendations which the Commission have made are at present before the International Council for study and we hope to have your advice before we meet again next May. So you will see that in one way and another we intend being very demanding upon your affections!

The Convention of 1946 has its southern limit along latitude 48° N.—about the latitude of Brest. The state of the fish stocks southwards to Gibraltar, and even beyond, has been a matter of concern to France, Spain and Portugal, whose fishery administrations and fishing industries have formulated proposals for mesh-regulation and size-limits for fish landed from that area between Brest and Gibraltar on which the three countries have consulted the Permanent Commission.

The Commission have welcomed the 3-country proposals while stating their belief that, as the mesh sizes and fish size-limits would differ to some extent from those operative north of the Brest line, they could best be put into force through a separate Convention. It is hoped, however, not only that the Governments of France, Spain, Portugal will find it possible to make a Convention together for the area in question, but also that the Permanent Commission will enjoy a close association with the supervisory body and that at a later date it will even be found possible to merge the two Conventions together.

At the last meeting of this Council I mentioned that there were two opinions in the Commission about the extent of its powers in fisheries conservation and management. This has led to a proposal from the United Kingdom Government that the member countries should meet together, at first at least in an informal way, to consider whether the Convention of 1946 merits revision in order to give the Permanent Commission clearer authority and wider conservation functions than all can agree it possesses.

A meeting to consider these matters may be held this autumn.

If I have said overmuch, my excuse, Mr. President, is that the International Council and the Permanent Commission are such close relatives that I feel we should be well acquainted with each other's activities.

I wish only to repeat in closing how much indebted the Commission feel for the unstinted help and co-operation we are enjoying from the International Council under you, Mr. President, and the Secretary-General, Dr. FRIÐRIKSSON, and from your Liaison Committee under the leadership of Mr. WIMPENNY."

Agenda, Point 5. Mr. LIENESCH then dealt with the International Whaling Commission as follows:— "As observer for the Council I can give here a very short summary of the 6th meeting of the International Whaling Commission, held in Tokyo in July 1954. The meeting was well attended by all the member country's delegates and many observers from interested governments. After full discussion, the I.W.C. decided to propose the same catch limit for the Antarctic as in 1954 with slight alterations in the composition of the catch. As there is some evidence of a rather weak stock of blue whales the I.W.C. would like to give some further protection to this species. The same applies to the stock of humpbacks. The regulations for the coming season are in accordance with the aim of the I.W.C. protection of the whale stock.—For the Antarctic season the opening date will be delayed to the 7th January and for blue whales to the 21st January. Both regulations shall stand for a period of 5 years. Also in the Atlantic area, it is hoped, the blue whales get better protection in the coming years, but these regulations are not due of course to come into operation until 8th November, provided there are no objections. The meeting was a successful one and the Japanese Government made this possible by an excellent organization of the necessary arrangement.—The government of the U.S.S.R. have invited the I.W.C. to meet next year in Moscow and this invitation has been accepted."

Agenda, Point 6. Mr. ROLLEFSEN said a few words about the success of the meeting of I.C.N.A.F. in Halifax in June of this year.

Agenda, Point 7. Dr. KESTEVEN made a statement as follows:—

"Mr. President, Ladies and Gentlemen,

At the last meeting of the Council, in Copenhagen, you gave me the opportunity of addressing a few words to the Council on matters concerning the Food and Agriculture Organization. I took advantage of that opportunity, in order to express the high respect which we in the FAO have for the Council and the admiration which we have for its work. One consequence of your having given me that opportunity last year is that this year I return to seek your advice and assistance on certain matters with which we are concerned: a consequence which you might not regard as entirely pleasant, but one which we felt followed naturally, considering the nature and importance of our problems, and the eminence of the Council.

With your permission, Mr. President, there has been distributed a statement, which I have prepared, which describes our problems. This concerns a survey of resources which the FisheriesDivision of the FAO has been directed to make. At the beginning of this paper I refer to the world problem of food production and the place of fisheries in it. I then indicate the importance of knowledge concerning the resource, *per se*, as a basis to any programme to improve the total food availability for human beings. You will then find set out a tentative analysis of what is involved in a resources survey and it is on this, first, that we should be grateful to have comment from the Council: we should like to have the Council's views on the validity of this analysis. However, in its present form this analysis then serves, in my paper, as a basis to an argument to show what is meant by the term "world survey of living aquatic resources". This argument seeks to show what there is to be done, at the international level, to gather facts concerning resources and to develop theory about their nature, and the means of investigating and of exploiting them. Of this work a certain proportion can be undertaken by the FAO, but for much of the programme the FAO must turn to regional bodies such as ICES, for guidance and assistance. I would hope, Mr. President, that there might in this meeting be opportunity to examine these concepts and plans and perhaps to consider proposing some form of collaboration between our two organizations."

The meeting adjourned at 11.15 a. m.

Meeting of Delegates, First Session, followed immediately.

Agenda, Points 8 and 9. The President opened the proceedings and presented the estimated statement of Accounts for 1953/54, and explained that the Bureau had decided that the Excess of Income over Expenditure (33,000 kr.) should not all be carried forward to the Capital Reserve Fund, but be divided between that Fund and the Pension Fund. After some discussion of the item Publications, the estimated account was accepted.

Agenda, Point 10. The President moved the final approval of the Accounts for 1952/1953. This was carried.

Agenda, Point 11. The President asked the Council to approve the Administrative Report. This was approved by the Council.

Agenda, Point 12. The President said that the Bureau proposed that the Council should elect an *ad hoc* Committee consisting of three members, one to represent each of the following three groups of participating countries:— 1) Denmark, Finland, Iceland, Norway, Sweden; 2) United Kingdom, Germany, Ireland, Netherlands; 3) France, Belgium, Portugal, Spain.

The President informed the Council that the question of Uniformity of Honoraria set out in the paper circulated with the Agenda would be dealt with in the Delegates Meeting on Tuesday at 11.30 a.m. after the election of President and Vice-Presidents.

The meeting adjourned at 11.45 a.m.

Meeting of Delegates, Second Session, Tuesday, 5. October 1954, at 11.30 a.m.

Agenda, Point 13. The President opened the proceedings by calling on the Chairman of the *ad hoc* Committee to report. Dr. Lucas said that the Committee unanimously proposed the election of Mr. Dobson as President, Professor Sverdrup as First Vice-President and Dr. Táning, Dr. Furnestin and Dr. Leloup as Vice-Presidents. This proposal was moved by Mr. Rollefsen and seconded by Mr. Jónsson and was unanimously carried.

The President thanked the delegates for the honour conferred upon him and said that if it was the wish of the Council that he should continue for another year, he would be happy to do so.

Agenda, Point 14. The President explained that at the Bureau Meeting in May this year, it had been suggested that the International Council should come into line with other councils, as regards the status of the President, that is, the President should be independent and not bound by delegacy to his country. In such an event his travelling and subsistence expenses to Council Meetings would have to be paid by the Council, involving an addition of some 1,000 kr. or 1,500 kr. to the budget. For convenience the President should function as a Delegate to the end of the financial year when a new Delegate would be appointed. The amendment was moved by Dr. Went and seconded by Dr. Ramalho and was then accepted unanimously, as follows:—

To be inserted after Rule 2: "On appointment, the President shall be regarded as independent, although he shall continue as his country's Delegate for the remainder of the financial year in which he is appointed. A new Delegate to replace him thereafter may be appointed by the participating Government concerned. Nothing shall prevent his re-election for a further term or terms within the scope of Rule 3, although he will have ceased to be a Delegate.

The travelling and subsistence expenses incurred by the President in attending the meetings of the Council and the Bureau, or when otherwise engaged on the business of the Council shall be a charge upon the funds of the Council."

Honoraria Uniformity. The President called attention to the note concerning honoraria, which had been circulated to the members of the International Council in July this year. The Bureau had been asked by the Finance Committee to explore this question, with a view to a reduction of the total sum involved. As a result the Bureau proposed to pay a uniform rate of 1,500 kr. to all Chairmen. The question of honoraria had been discussed over a good many years and some reductions had been made, but they were not regarded sufficient. With a uniform rate of 1,500 kr. some honoraria would be raised and some reduced, but the sum arrived at looked like a fair compromise and would mean a saving to the Council of about 5-6,000 kr. If accepted it should be included in the budget for 1954/55. Since this proposal had been made, the payment of an honorarium had been suggested in the case of statistics.

Dr. Went referred to the meeting of the Statistical Committee that morning where a memorandum by the General Secretary had been considered concerning promotion and expansion of the work of the Committee. In this case it would be unfair not to pay honorarium to the Chairman.

It was understood that the Consultative Committee were considering a slight rearrangement of the Committees.

The proposal regarding honoraria was adopted, with the addition of a honorarium to the Chairman of the Statistical Committee.

Other Business. The President said that he could not close the meeting without extending a warm vote of thanks to Mr. Lienesch for services rendered to the Bureau for five years. He had retired under the time limit, but the Council was very much in his debt.

Mr. Rollefsen asked for permission to express a personal view regarding the staff of the Council. He thought they should all be entitled to an international status, the Council being formed of a number of member countries. The same applied to the staff of ICNAF. In his opinion the staff of ICES and ICNAF should not be tied to any governmental scale of salaries in force in respectively Denmark and Canada. Mr. Rollefsen said that steps should be taken to ensure to the staff of these two bodies an overall status corresponding with their international character

The President replied that the former General Secretary, Mr. DESSAU, had already taken steps in this direction, but the Danish Government refused to agree. They had been approached again in regard to Mr. FRIÐRIKSSON, but the Danish Government could not find any authorization in the Danish law. Speaking for the Council the President assured Mr. ROLLEFSEN that the matter was being actively pursued so far as the General Secretary was concerned.

The meeting adjourned at 12.40 p. m.

Meeting of Delegates, Third Session, Tuesday, 12. October 1954, at 10 a.m.

The President opened the meeting by drawing attention to the fact that a certain number of Delegates would not be able to attend the meeting owing to the Shellfish Expedition having started the same morning.

Agenda, Point 15. The President said that the Consultative Committee's recommendations had been approved generally by the Bureau and explained that they could be divided into three parts: 1) Re-organization of Committees, 2) matters which did not require action on the part of the Delegates, 3) recommendations involving the expenditure of kr. 1,500 which would be dealt with under the item Travelling Expenses on the Estimate.

The Recommendations were then adopted *en bloc.*

Agenda, Point 16. The President presented the Budget for 1954/55 and explained the various items.

He explained that for the last two years he had accepted an entertainment allowance of kr. 1,000 and no honorarium, as he had been paid by his Government for serving on the Council, but due to the amendment of the Rules under which the President is independent, he could no longer ask payment from his Government and would ask permission to receive 4,000 kr. as an honorarium and 1,000 kr. as an entertainment allowance.

The item Travelling Expenses would include kr. 1,500 recommended by the Hydrographical Committee for provision to be made for two Sub-Committees to meet prior to the next Assembly of the Council.

The President said that the Excess of Income over Expenditure was not as large as in the present year but that was mostly due to the increase of the item Publications, but he thought it a healthy Budget and asked for the Council's approval.—Approved.

Agenda, Point 17. The Council elected for 1954/55 Lt.-Cdr. J. R. LUMBY as Editor of the *Journal du Conseil,* Dr. THORSON as Editor and Mr. F. S. RUSSELL as Co-Editor of the *Fiches d'Identification du Zooplancton.*

Apart from the permanent members of the Finance Committee the Council elected Dr. WENT, Dr. CLAUSSEN and Mr. ROLLEFSEN, and the President informed the Council that he had nominated Dr. FURNESTIN as his personal nominee from among the Bureau members.

The meeting terminated at 10.40 a.m.

General Assembly, Final Meeting, Tuesday, 12. October 1954, at 11.00 a. m.

The President opened the meeting and read the following telegrams received from the King of Denmark and Dr. K. A. ANDERSSON:—

"Je vous prie d'accepter mes remerciements les plus sincères. FREDERIK R."

"Sincere thanks for your kind telegram I wish you a most successful meeting.
K. A. ANDERSSON."

The President gave a brief resumé of the Estimates for 1954/55 adopted by the Council and showing a total expenditure of kr. 325,000 with an Excess of Income over Expenditure of about 12,000 kroner.

Agenda, Point 20. The President reported briefly on the resolution based on the Consultative Committee's recommendations.

Agenda, Point 21. The President informed the Assembly that it had been decided to meet next year from 24. October to 1. November owing to a British Exhibition to be held in Copenhagen from 29. September to 16. October.

Agenda, Point 22. Dr. HERBERT W. GRAHAM, U. S. Fish and Wildlife Service, and Dr. ERIK M. POULSEN, Secretary to ICNAF, expressed their appreciation for having been invited to attend the Council Meeting as observers and also thanked the French Government for its hospitality.

M. le Professeur L. ZENKEVITCH spoke as follows:—

"Monsieur le Président,

La Délégation Soviétique tient à vous remercier d'avoir pu assister à la 42ème cession du Conseil International pour l'Exploration de la Mer. Permettez-moi, M. le Président, au nom de la Délégation Soviétique, de témoigner à vous ainsi qu'au Bureau notre reconnaissance pour nous avoir mis au courant des travaux du Conseil International.—La Délégation Soviétique exprime aussi sa gratitude pour l'hospitalité reçue par le Gouvernement Français."

Mr. CIEGLEWICZ thanked the Council on behalf of the Polish Government for the invitation to be represented at the 42nd Council Meeting and expressed

his gratitude to the French Government for their hospitality.

The President expressed the Council's pleasure in seeing the U.S.S.R. represented on this occasion and welcomed again the observer from Poland and hoped that the U.S.S.R. and Poland would consider the question of joining and re-joining the Council, respectively.

M. Le Gorgeu spoke as follows:—

"Monsieur le Président,

Avant que cette réunion se termine je tiens à vous dire au nom de la Délégation Française combien nous avons été heureux de vous accueillir à Paris. Nous avons fait tout ce que nous avons pu pour vous être agréable. Tous les travaux ont été d'une grande utilité. Mais ces réunions, M. le Président, ont encore un intérêt plus général, puisqu'elles nous permettent de mieux nous connaître et de mieux nous comprendre, et je suis persuadé, que lorsque les peuples se connaissent mieux cela contribue à garder la paix. Je me permets d'émettre un vœu: que vous reviendrez à Paris où—vous pouvez en être sûrs—vous serez toujours reçus très cordialement."

The President concluded the meeting in expressing a hearty vote of thanks to the French Government for their great hospitality and for having provided extra staff for which the Council was in great debt.

He also stressed the indebtness of the Council for the arduous and diligent assistance rendered by all members of the staff.

The meeting terminated at 11.40 a.m.

Approved Budget for the Financial Year $^{1}/_{11}$ 1954—$^{31}/_{10}$ 1955.

EXPENDITURE

	D. Kr.	D. Kr.
I. Incidentals		
1. President	5,000.00	
2. Chairmen	19,400.00	
		24,400.00
II. Salaries		
1. General Secretary	17,000.00	
Administrative Department:—		
2. Assistant Secretary	12,385.37	
3. Part Time Assistant	4,000.00	
Publications Department:—		
4. Assistant Secretary	12,385.37	
5. Dr. Rehder	1,255.35	
6. Assistant	9,400.00	
Statistical Department;—		
7. Assistant Secretary	12,385.37	
Hydrographical Department:—		
8. Hydrographer	20,243.71	
9. Assistant	11,133.26	
10. Assistant	9,000.00	
11. Part Time Assistant	4,217.40	
12. Part Time Assistant	3,885.00	
		117,290.83
III. Office Expenses		27,920.00
IV. Travelling Expenses		8,000.00
V. Publications		113,700.00
VI. Pensions[1])		33,670.37
VII. Contingencies		1,000.00
Estimated Excess of Income over Expenditure		11,418.80
		337,400.00

RECEIPT

	D. Kr.	D. Kr.
I. Contributions		
Belgium	20,000.00	
Denmark	20,000.00	
Finland	10,000.00	
France	40,000.00	
German Federal Republic	40,000.00	
Iceland	20,000.00	
Ireland	15,000.00	
Netherlands	20,000.00	
Norway	20,000.00	
Portugal	15,000.00	
Spain	20,000.00	
Sweden	20,000.00	
United Kingdom	40,000.00	
		300,000.00
II. Interest		
On Bank Deposits	2,500.00	
On Investments	4,500.00	
On Pension Fund	4,900.00	
		11,900.00
III. Sale of Publications		24,000.00
IV. Contribution		
from Woods Hole Oceanographic Institution towards collecting and publishing American observations for Bulletin Hydrographique		1,500.00
		337,400.00

[1]) The difference between the amount of pensions and the sum of interest yielded by the Pension Fund will be paid as a subvention to the persons concerned.

Resolutions passed by the 42nd Statutory Meeting, 1954.

Rules.

C. Res. 1954/1:

Amendments (of the Rules): *vide* report of Second Meeting of Delegates, Agenda, Point 14.

C. Res. 1954/2:

Honoraria Uniformity: The proposal regarding honoraria was adopted, with the addition of a honorarium to the Chairman of the Statistical Committee.

Organization.

C. Res. 1954/3:

A. a) The Council resolved that, in view of the changing needs of time, whereby a greater emphasis be given to functional activities two new committees be set up, concerning (i) Gadoid Fish, and (ii) Comparative Fishing.

b) That, in order to permit the formation of these committees without extending unduly the work of the Council (i) the North-Eastern and North-Western Sub-Committees be combined into a Distant Northern Seas Committee and (ii) the North Sea, the Transition and the Baltic Committees be replaced by two committees, the Near Northern Seas Committee and the Baltic Belt Seas Committee with appropriate adjustment of their boundaries.

c) It was further agreed that the two Sub-Committees under the Atlantic Committee be changed to full committees:— the Sardine Committee and the Scombriform Fish Committee.

d) It was further decided that the Northern Seas Committee and the Pelagic Committee be abolished in view of the rearrangement of Committees already made.

B. The new boundaries of Area Committees were fixed as follows:—

Distant Northern Seas.

The area of the North Atlantic north of the latitude of Rockall and thence north of the northern boundaries of the Near Northern Seas area.

Near Northern Seas.

On the south and east by the coastline of the European mainland and the 1946 Fisheries Convention boundary to the north of the Belts and the Sound. On the north from the Norwegian coast along Latitude 64° N. until it reaches the 1000 m. contour thereafter along this contour to Latitude 60°. On the west from Latitude 60° N. southward along Longitude 10° W. to the coast of Ireland, and along the north and east coasts of Ireland to Carnsore Point, thence in a straight line to Cape St. David along the English south and west coasts to Longitude 2° W. and from this intersection along 2° W. to Cape La Hague.

Atlantic Committee.

Between the latitudes of Rockall and the Equator and west of the western limits of the Near Northern Seas area and the European and African coast lines.

Baltic-Belt Seas Committee.

The Baltic and Belt Seas south and east of the 1946 Fisheries Convention boundary.

C. The Liaison Committee should consist of the following members: the Chairman of the Consultative Committee, the Distant Northern Seas, the Near Northern Seas, the Atlantic, the Gadoid Fish, and the Comparative Fishing Committees.

Papers read at the Special Scientific Meetings.

C. Res. 1954/4:

It was agreed that the Secretariate should be instructed not to accept contributions for duplication longer than 2000 words and tables and/or illustrations only so far as absolutely necessary to the understanding of the text.

C. Res. 1954/5:

It was agreed that the contributions to the Special Scientific Meetings 1954 should be published subject to careful preliminary editing by the Conveners and Rapporteurs.

Action for the Bureau.

C. Res. 1954/6:

It was resolved that the Bureau should arrange for the Council to ask the Danish Foreign Office to approach member governments and suggest that the statistics asked for by the Council should be produced by September first following the year to which they relate.

Co-operation with F.A.O.

C. Res. 1954/7:

The Council resolved to place such information and publications at the disposal of the F.A.O. plans for a world survey of living aquatic resources (see Appendix) as may be available, and also to ask the Secretariate to put the F.A.O. organization of the survey of aquatic resources into touch with such expert members of the Council as would be of assistance to their plans.

Recommendation to F.A.O.

C. Res. 1954/8:

The Council has heard with appreciation that F.A.O. is considering the possibility of providing a more extensive world bibliographic and abstracting service with an annual summary and feels that if this step can be taken it would be of great value.

Intermediate Meetings.

C. Res. 1954/9:

The Council approved of Recommendation 1 and 2 of the Hydrographical Committee that provision be made for the Sub-Committees on (a) the preparation of final mean charts of surface temperature and salinities and (b) for the revision of the present standard method of salinity determination to meet, if necessary, prior to the next assembly of the Council in order that it may report at the assembly. It was not thought that the expenditure would involve more than 1,500 kr. of the Council's funds.

C. Res. 1954/10:

The Council approved the Budget for 1954/55 including President's honorarium of 4,000 kr. + 1,000 kr. for entertainment allowance.

APPENDIX

The F.A.O. Plans for a World Survey of Living Aquatic Resources.

Definition of the World Survey of Living Aquatic Resources and a Plan of Work:—

A programme to bring together, according to certain agreed principles, all relevant available data concerning the living aquatic resources and their environment, with a view to

1. furnishing a broad conspectus of these resources,
2. adducing certain conclusions in principle, concerning the theory of the survey and exploitation of resources and the methods to be used, that will apply to individual survey projects and assist those engaged in such work.

The Fisheries Division envisages a programme of work along two lines, that is, that there should be one line of work concerned with gathering data, and a second line concerned with examining theory and method. It is intended that these two lines of activity should be closely integrated so that, in the course of the work, progress in one line should contribute to the development of the other: we envisage that these two lines should converge upon a world congress, corresponding in some way to the UNSCCUR Meeting. We would hope that a competent gathering of fishery scientists would here review and appraise the results of these activities, and we would hope that this review would result in a substantial advance upon the conclusions which were drawn at the UNSCCUR Meeting.

We wish to consult ICES as to plan by which data should be gathered and to seek the Council's assistance in the task of collecting and interpreting the compilations when completed. We have yet to decide upon the schedule of information which should be gathered, how and by whom the collection should be made, how the data should be reduced and accumulated, and how, finally, they should be presented. We have been giving much attention to the bibliographic aspects of this work, both to the problem of extracting information from the accumulated literature as well as keeping abreast of current work. We have also been considering the classification of our subject matter and the codification of fact. We have also examined various forms of maps and diagrams by which we might represent both the state of knowledge on particular matters, and the actual content of the knowledge. However, we should be grateful if we might have the opportunity at some time convenient to the Council to discuss these problems and to draw upon the experience of the people who compose this Council. But, further, we should like to have the collaboration of the Council in the actual task. Obviously, these compilations must be made according to biogeographic zones and according to the regions defined by the regional Councils and Commissions. We should hope that each of these bodies would collaborate as far as lay in its power—at least in guiding the work of compilation according to the agreed plan and in interpreting the results.

In respect of the second line of activity, our suggestion is that we should convene three principal subject meetings to deal with each of the following subjects:—

1. Recruitment and Mortality in Exploited Populations.
2. The Growth of Useful Organisms and Their Productivity.
3. Production for Human Use by Fishing and Cultivation.

The intention would be that these subject meetings should permit a stocktaking of our theory and practice in each of the major sub-divisions (as we see them) of the general theory of fishing. We might add that the Fisheries Division is planning a meeting on Gear Technology, and we hope that this may be convened more or less concurrently with the third of the meetings listed above so that it should be possible to arrange a joint meeting of biologists with economists and technologists to consider the problem of measurement of effort. We should like to have the advice of the Council on the practicability and desirability of convening such a series of meetings and, if this should be agreed to, on the agenda for the meetings and the arrangements to be made for them. We hope that, if agreement has been reached to this stage, we might have the assistance of the Council in the conduct of one or more of the meetings.

G. L. Kesteven.

List of Members of Committees as set up or in Existence at the Paris Meeting.

(One member, only, from each country is entitled to vote.)

Consultative Committee.

Mr. R. S. WIMPENNY, Chairman,
Dr. Å. V. TÅNING,
Dr. J. HULT,
Dr. AA. J. C. JENSEN,
Dr. J. FURNESTIN,
Dr. C. E. LUCAS,
Mr. G. ROLLEFSEN,
Dr. W. C. HODGSON,
Dr. JUAN CUESTA,
Prof. F. FRADE,
Dr. A. E. J. WENT,
Dr. B. HAVINGA,
Prof. H. U. SVERDRUP,
Prof. T. BRAARUD,
Dr. J. LUNDBECK,
Mr. J. R. LUMBY.

Editorial Committee.

The Chairman of the Consultative Committee, the Editor of the *Journal du Conseil*, and the General Secretary.

Distant Northern Seas Committee.

Belgium:	Mr. CH. GILIS,
Denmark:	**Dr. Å. V. TÅNING, Chairman,**
	Dr. PAUL M. HANSEN,
England:	Mr. R. J. H. BEVERTON,
	Mr. A. J. LEE,
Finland:	Dr. G. GRANQVIST,
France:	Dr. J. ANCELLIN,
	Mr. CL. NÉDÉLEC,
Germany:	Dr. J. LUNDBECK,
Iceland:	Mr. JÓN JÓNSSON,
Ireland:	Dr. A. E. J. WENT,
Netherlands:	Dr. B. HAVINGA,
	Mr. L. K. BOEREMA,
Norway:	Mr. B. RASMUSSEN,
	Mr. G. ROLLEFSEN,
Scotland:	Dr. C. E. LUCAS,
	Dr. B. B. RAE.

Near Northern Seas Committee.

Belgium:	Dr. E. LELOUP,
	Mr. CH. GILIS,
Denmark:	Dr. E. BERTELSEN,
	Dr. AA. J. C. JENSEN,
England:	Mr. R. S. WIMPENNY,
	Mr. R. J. H. BEVERTON,
France:	Dr. J. ANCELLIN,
	Mr. CL. NÉDÉLEC,
Germany:	Dr. A. BÜCKMANN,
Ireland:	Dr. A. E. J. WENT,
Netherlands:	Dr. B. HAVINGA,
	Mr. L. K. BOEREMA,
Norway:	Mr. FINN DEVOLD,
	Mr. G. DANNEVIG,
Scotland:	Dr. H. WOOD,
	Dr. C. E. LUCAS,
Sweden:	**Dr. J. HULT, Chairman,**
	Dr. CHR. HESSLE.

Baltic-Belt Seas Committee.

Denmark:	**Dr. AA. J. C. JENSEN, Chairman,**
	Mr. J. KNUDSEN,
Finland:	Prof. ERKKI HALME,
Germany:	Prof. R. KÄNDLER,
Norway:	Dr. ALF DANNEVIG,
	Mr. B. RASMUSSEN,
Sweden:	Mr. G. OTTERLIND,
	Dr. F. KOCZY.

Atlantic Committee.

Belgium:	Dr. E. Leloup,	France:	Mr. J. Cadenat,
	Mr. Ch. Gilis,	Germany:	Dr. A. Bückmann,
Denmark:	Dr. Å.V. Täning,	Ireland:	Dr. A. E. J. Went,
	Dr. E. Bertelsen,	Portugal:	Dr. A. de M. Ramalho,
England:	Dr. W. C. Hodgson,		Prof. F. Frade,
	Dr. C. F. Hickling,	Scotland:	Dr. C. E. Lucas,
France:	**Dr. J. FURNESTIN, Chairman,**	Spain:	Dr. F. Navarro,
	Mr. P. Desbrosses,		Dr. F. Cabañas Ruesgas,
	Mr. R. Letaconnoux,		Prof. R. Montequi,
	Mr. R. Coupé,		Dr. N. Menendez.

Comparative Fishing Committee.

Belgium:	Mr. Ch. Gilis,	Netherlands:	Dr. B. Havinga,
Denmark:	Dr. Aa. J. C. Jensen,		Mr. L. K. Boerema,
	Mr. K. Popp Madsen,	Norway:	Mr. G. Sætersdal,
England:	Mr. A. R. Margetts,		Mr. G. Rollefsen,
	Mr. R. J. H. Beverton,	Portugal:	Dr. A. de M. Ramalho,
Finland:	Prof. Erkki Halme,	Scotland:	**Dr. C. E. LUCAS, Chairman,**
France:	Mr. R. Letaconnoux,		Mr. B. B. Parrish,
	Mr. L. Faure,	Spain:	Dr. J. M. Navaz y Sanz,
Germany:	Dr. A. von Brandt,		Dr. Juan Cuesta.
Iceland:	Mr. Aðalsteinn Sigurðsson,	Sweden:	Mr. S. I. K. Sörensen,
Ireland:	Dr. A. E. J. Went,		Mr. G. Otterlind.

Gadoid Fish Committee.

Belgium:	Mr. Ch. Gilis,	Netherlands:	Dr. L. K. Boerema,
Denmark:	Dr. Paul M. Hansen,	Norway:	**Mr. G. ROLLEFSEN, Chairman,**
	Mr. J. S. Joensen,		Mr. G. Sætersdal,
England:	Mr. L. Birkett,	Portugal:	Dr. A. de M. Ramalho,
	Mr. G. C. Trout,	Spain:	Dr. Juan Cuesta,
France:	Mr. L. Faure,		Dr. F. Cabañas Ruesgas,
	Dr. J. Ancellin,	Scotland:	Dr. C. E. Lucas,
Germany:	Dr. J. Lundbeck,		Mr. R. Jones,
Iceland:	Mr. Jón Jónsson,	Sweden:	Mr. S. I. K. Sörensen,
Ireland:	Dr. A. E. J. Went,		Mr. G. Otterlind.
Netherlands:	Dr. B. Havinga,		

Herring Committee.

Belgium:	Mr. Ch. Gilis,	Netherlands:	Dr. B. Havinga,
Denmark:	Dr. Å V. Täning,		Prof. G. P. Baerends,
	Dr. Aa. J. C. Jensen,	Norway:	Mr. Finn Devold,
England:	**Dr. W. C. HODGSON, Chairman,**		Mr. O. Aasen,
France:	Dr. J. Ancellin,	Scotland:	Dr. H. Wood,
Germany:	Dr. A. Bückmann,		Mr. B. B. Parrish,
Iceland:	Dr. H. Einarsson,	Sweden:	Dr. H. Höglund,
Ireland:	Mr. E. D. Toner,		Mr. G. Otterlind.

Hydrographical Consultant: Dr. J. B. Tait. Plankton Consultants: Dr. J. H. Fraser and Prof. T. Braarud.

Sardine Committee.

Belgium:	Dr. E. Leloup,	Norway:	Mr. G. Dannevig,
	Mr. Ch. Gilis,		Mr. K. Gundersen,
England:	Dr. W. C. Hodgson,	Portugal:	Dr. A. de M. Ramalho,
	Dr. D. H. Cushing,		Prof. F. Frade,
France:	Dr. J. Furnestin,	Scotland:	Dr. H. Wood,
	Mr. R. Letaconnoux,		Mr. B. B. Parrish,
Germany:	Dr. H. Aurich,	Spain:	**Dr. JUAN CUESTA, Chairman,**
Ireland:	Dr. A. E. J. Went,		Mme. M. G. de Navarro,
			Dr. M. Oliver.

Scombriform Fish Committee.

Belgium:	Dr. E. Leloup,
	Mr. Ch. Gilis,
England:	Mr. A. C. Simpson,
	Dr. W. C. Hodgson,
France:	Mr. R. Letaconnoux,
Germany:	Dr. P.-F. Meyer-Waarden
Ireland:	Dr. A. E. J. Went,
Norway:	Mr. G. Dannevig,
Norway:	Mr. A. Revheim,
Portugal:	**Prof. F. FRADE, Chairman,**
	Dr. A. de M. Ramalho,
Scotland:	Mr. B. B. Parrish,
	Dr. H. Wood,
Spain:	Dr. J. M. Navaz y Sanz,
	Dr. F. Lozano Cabo.
Sweden:	Mr. S. I. K. Sörensen.

Salmon and Trout Committee.

Denmark:	Mr. Knud Larsen,
England:	Mr. F. T. K. Pentelow,
	Mr. A. Swain,
Finland:	Prof. E. Halme,
France:	Mr. R. Vibert,
Germany:	Prof. R. Kändler,
Iceland:	Mr. T. Guðjonsson,
Ireland:	**Dr. A. E. J. WENT, Chairman.**
Netherlands:	Mr. G. J. Lienesch,
Norway:	Mr. L. Rosseland,
Scotland:	Mr. K. A. Pyefinch,
Spain:	Dr. Juan Cuesta,
Sweden:	Dr. B. Carlin,
	Mr. G. Otterlind.

Shellfish Committee.

Belgium:	Dr. E. Leloup,
	Mr. Ch. Gilis,
Denmark:	Mr. E. Ursin,
England:	Dr. H. A. Cole,
	Mr. G. D. Waugh,
Finland:	Dr. S. Segerstråle,
France:	Mr. P. Desbrosses,
	Mr. R. Ladouce,
Germany:	Dr. P.-Fr. Meyer-Waarden,
	Dr. H. Mann,
Ireland:	Mr. F. A. Gibson,
Netherlands:	**Dr. B. HAVINGA, Chairman,**
	Dr. P. Korringa,
Norway:	Mr. B. Rasmussen,
Portugal:	Dr. H. Vilela,
Scotland:	Dr. C. E. Lucas,
	Dr. H. J. Thomas,
Spain:	Dr. J. M. Navaz y Sanz,
Sweden:	Dr. H. Höglund,
	Mr. S. Sahlin.

Hydrographical Committee.

Belgium:	Dr. E. Leloup,
	Mr. Ch. Gilis,
Denmark:	Mr. Helge Thomsen,
	Mr. F. Hermann,
England:	Mr. J. R. Lumby,
Finland:	Dr. G. Granqvist,
France:	Dr. J. Furnestin,
	Mr. P. Desbrosses,
Germany:	Dr. G. Böhnecke,
	Dr. G. Dietrich,
Iceland:	Mr. U. Stefánsson,
	Dr. H. Einarsson,
Ireland:	Dr. A. E. J. Went,
Netherlands:	Vice-Admiral J. W. Termijtelen,
	Dr. P. Groen,
Norway:	**Prof. H. U. SVERDRUP, Chairman,**
	Dr. Jens Eggvin,
Portugal:	Dr. A. de M. Ramalho,
Scotland:	Dr. John B. Tait,
Spain:	Dr. Nicanor Menéndez,
	Commander Fernando Balén,
Sweden:	Dr. B. Kullenberg,
	Dr. N. G. Jerlov.

Plankton Committee.

Belgium:	Dr. E. Leloup,
Denmark:	Mr. J. Grøntved,
	Prof. E. Steemann Nielsen,
England:	Mr. F. S. Russell,
	Mr. R. S. Wimpenny,
Finland:	Prof. Erkki Halme,
France:	Dr. L. Fage,
	Prof. F. Bernard,
	Mlle J. Fleury,
Germany:	Dr. J. Krey,
Iceland:	Dr. H. Einarsson,
Ireland:	Dr. A. E. J. Went,
Netherlands:	Dr. B. Havinga,
Norway:	**Prof. T. BRAARUD, Chairman,**
	Mr. Kr. Fr. Wiborg,
Scotland:	Dr. J. H. Fraser,
Spain:	Dr. J. Cuesta,
	Dr. Maria Alvariño,
Sweden:	Dr. Hans Höglund,
	Dr. N. G. Jerlov.

Whaling Committee.

Dr. N. A. MACKINTOSH, Chairman,
Mr. M. Terrin,
Dr. C. E. Lucas,
Dr. Å. V. Tåning,
Prof. J. T. Ruud,
Mr. G. J. Lienesch,
Mr. Jón Jónsson.

Statistical Committee.

Belgium:	Mr. Ch. Gilis,	Netherlands:	Mr. G. J. Lienesch,
Denmark:	Dr. Aa. J. C. Jensen,	Norway:	Mr. A. Angerman,
England:	Mr. R. S. Wimpenny,		Mr. Johs. Sellæg,
	Mr. R. J. H. Beverton,	Portugal:	Dr. A. de M. Ramalho,
Finland:	Prof. E. Halme,	Scotland:	Mr. B. B. Parrish,
France:	Mr. A. Alloy,		Dr. C. E. Lucas,
Germany:	**Dr. J. LUNDBECK, Chairman,**	Spain:	Mr. M. Rodriguez Rey,
Iceland:	Mr. D. Olafsson,	Sweden:	Mr. S. Sahlin,
Ireland:	Dr. A. E. J. Went,		Dr. Chr. Hessle.
	Mr. F. A. Gibson,		

Finance Committee.

Mr. A. T. A. DOBSON, Chairman,
Dr. J. Furnestin,
Dr. Å. V. Tåning,
Mr. B. Dinesen,
Mr. G. Rollefsen,
Dr. J. Claussen,
Dr. A. E. J. Went.

Special Sub-Committees.

Sub-Committee on the Faroe Question.

Dr. Å. VEDEL TÅNING, Chairman,
Mr. R. S. Wimpenny,
Mr. Cl. Nédélec,
Dr. B. Havinga,
Mr. Birger Rasmussen,
Dr. C. E. Lucas,
Mr. Jón Jónsson.

Sub-Committee for the Standardization of Zooplankton Methods.

Mr. F. S. RUSSELL, Chairman,
Mr. R. S. Wimpenny,
Dr. J. H. Fraser,
Dr. H. Höglund,
Mr. K. F. Wiborg.

Liaison Committee

in connexion with the Permanent Commission of the 1946 Fisheries Convention.

The Chairman of the Consultative Committee, Chairman,
the Chairman of the Distant Northern Seas Committee,
the Chairman of the Near Northern Seas Committee,
the Chairman of the Atlantic Committee,
the Chairman of the Comparative Fishing Committee, and
the Chairman of the Gadoid Fish Committee.

List of Editors.

Rapports et Procès-Verbaux	**The General Secretary.**
Annales Biologiques	**„**
Bulletin Statistique	**„**
Bulletin Hydrographique	**The Hydrographer.**
Journal du Conseil	**Lt.-Cdr. J. R. LUMBY.**
Fiches d'Identification du Zooplancton	**Dr. G. THORSON, Mr. F. S. RUSSELL, Co-Editor.**

ENGLISH VERSION

Special Scientific Meetings.

A. PROBLEMS AND METHODS OF SAMPLING FISH POPULATIONS

Convener: Mr. G. Rollefsen; Reporter: Mr. B. B. Parrish.

I. Proceedings.

Fifteen papers were presented covering a number of aspects of the subject of fish stock sampling.

The papers were treated under the following headings:—

1. Basic Sampling Theory;
2. Properties of Sampling Gear and Treatment of Commercial Statistics;
3. Applications of Catch Sampling Data;
4. Sampling Methods and Problems in various Countries.

After a very thorough discussion of the subject matter of the papers and of other aspects of the sampling problem, the Recommendations 1 and 2 were adopted.

Before the meeting closed Dr. Kesteven of F.A.O. and Professor G. M. Gerhardsen of "Norges Handelshøgskola" addressed the meeting on the "world", and "economic" aspects of the sampling problem, respectively.

As a result of the interest expressed by Dr. Kesteven on the subject matter of the meeting, a third recommendation (II, 3) was adopted.

II. Recommendations.

1. This meeting is agreed on the need for establishing common standardized units of fishing effort for the various fisheries in the Council's areas, and believe a study of suitable units could conveniently be made, at an early date by the Comparative Fishing Committee.

2. This meeting recommends that the papers presented should be published *in extenso* subject to the editorship of the Convener and Reporter and that they should be suitably preceded by a review and by an introduction by the Convener.

3. The meeting noted with interest that F.A.O. has in mind to call a meeting during 1956 or 1957 to receive and discuss papers on fishing gear and the reaction of fish to the gear and wished to draw the attention of the Comparative Fishing Committee to this event.

B. HERRING TAGGING TECHNIQUES AND RESULTS

Convener: Dr. W. C. Hodgson; Reporter: Mr. O. Aasen.

The following papers were read and discussed:—

Olav Aasen: "Estimation of the stock strength of the Norwegian winter herring."

J. Ancellin: "Note on fish tagging by means of Reverdin's surgical needle."

E. Bertelsen: "Danish tagging in the North Sea."

G. C. Bolster: "English tagging experiments."

Ch. Gilis: "Herring tagging in Belgium."

Á. Friðriksson: "Report on Iceland herring tagging."

H. Höglund: "Swedish herring tagging experiments, 1949—53."

Aa. J. C. Jensen: "Danish herring tagging inside the Scaw, 1949—52."

J. C. Stevensen: "The movements of herring in British Columbia waters as determined by tagging (with a description of tagging and tag recovery methods)."

H. Wood, B. B. Parrish, and G. McPherson: "Review of Scottish herring tagging experiments, 1948—53."

C. OYSTER AND MUSSEL CULTURE

Convener: Dr. B. Havinga; Reporter: Dr. H. A. Cole.

I. Proceedings.

Seventeen papers were presented to the meeting; all of them were read and discussed with the exception of Nos. 8, 9, 9a:—

1. M. Boury: "L'œuvre de Jean Coste et le développement de l'ostréiculture."
2. P. R. Walne: "Observations on the oyster (*Ostrea edulis*) breeding experiments at Conway, 1939—1953."
3. P. Trochon: "Etude sur la reproduction de l'huître plate, *Ostrea edulis*, dans les claires de la région de Marennes-Oléron."

   Report on papers 1—3 and discussion.
4. B. Andreu & P. Arté: "Expériences préalables sur la fixation des larves et la croissance hivernale des jeunes huîtres (*O. edulis*) des Rias galiciennes."
5. M. Thiéblemont-Colson: "Utilisation en Morbihan du collecteur-carton en vue du captage du naissain (*O. edulis*)."
6. H. J. Turner: "Preliminary experiments on the culture of bivalves in tanks."

6a. H. A. Cole & D. A. Hancock: "Progress in oyster research in Britain 1949—1954, with special reference to the control of pests and diseases."

Report on papers 4—6a and discussion.

7. P. Korringa: "Oyster culture and production biology."
8. F. Fraga: "Average seasonal variation of chemical constituents of the mussel (*M. edulis*)."
9. M. López-Benito: "Chemical contents of scallops (*Pecten jacobeus*)."

   Report on papers 7—9 and discussion.

9a. E. da Silva Graça, R. Carvalho Almeida & M. R. Melo Costa: "The chemical composition and nutritional value of Portuguese oysters."

10. H. Bouxin: "Observations sur le frai de *Mytilus edulis* var. *galloprovincialis* (Lmk.). Dates précises de frai. Facteurs provoquant l'émission de produits génitaux."
11. P. F. Meyer-Waarden: "Mussel culture in the German Waddensea."
12. B. Havinga: "Mussel culture in the Dutch Waddensea."
13. H. Brienne: "Croissance des moules du Boulonnais."

    Report on papers 10—13 and discussion.
14. P. F. Meyer-Waarden & H. Mann: "German investigations with respect to *Mytilicola intestinalis* in *Mytilus edulis* in 1953."
15. H. Mann: "The influence of *Mytilicola intestinalis* (Copepoda parasitica) on the development of the gonads of *Mytilus edulis*."

    Report on papers 14—15 and discussion.

II. Recommendation.

The meeting resolved that the papers presented at the Special Meeting on Oyster and Mussel Culture should be published by the Council subject to a suitable degree of editing by the Convener and Reporter, Dr. Havinga and Dr. Cole.

REPORTS

Report and Recommendations of the Consultative Committee.

Chairman: Mr. R. S. Wimpenny.

I. Proceedings.

1. The Chairman opened the meeting and expressed the sorrow of the Committee at the death of Prof. Le Gall, a loss which especially affected this particular Committee, with which he had been so closely identified. He then welcomed Dr. Furnestin as acting Chairman of the Atlantic Committee and congratulated him on having been nominated Director of the Institut Scientifique et Technique des Pêches Maritimes.

2. Progress Report.

Dr. Hodgson informed the members that the echo-sounding work on fish was now completed and ready for publication. The Chairman pointed out that the working group had brought their task to an early and effective conclusion and thanked Dr. Hodgson for his part in this work.

3. Rearrangement of Committees.

The Chairman's scheme of rearrangement of committees, submitted to the members prior to the Council Meeting, dealt with three chief points:—

a) The merging of the North-Eastern and North-Western Area Sub-Committees in a Distant Northern Seas Committee; b) the abolition of the North Sea, Transition and Baltic Area Committees to be replaced by a Near Northern Seas Committee and a Baltic-Belt Seas Committee, and c) the creation of two new committees, viz., a Gadoid Fish Committee and a Comparative Fishing Committee.

The Chairman asked the members to decide whether they wanted to alter the present pattern of committees and after a discussion in which Messrs. Tåning, Went, Jensen, and Lumby took part the question was put to the vote and carried. Recommendation 1 was adopted.

In the second session Dr. Furnestin submitted a recommendation from the Atlantic Committee proposing the establishment of two committees for the study of (i) the Clupeiform Fish (herring and sprat excepted), and (ii) of the Scombriform Fish, replacing the European and African Atlantic Slope Sub-Committees. The recommendation was carried. (Recommendation 1c).

In the third session the name Clupeiform Fish Committee was changed into the Sardine Committee. Further the abolition of the Pelagic and Northern Seas Committees was agreed upon. (Recommendation 1d).

A small *ad hoc* sub-committee was appointed to suggest the actual delimitation of the new committees, and in the second session of the Consultative Committee the boundaries were fixed. They were as follows:—

Distant Northern Seas.

The area of the North Atlantic north of the latitude of Rockall and thence north of the northern boundaries of the Near Northern Seas area.

Near Northern Seas.

On the south and east by the coastline of the European mainland and the 1946 Fisheries Convention boundary to the north of the Belts and the Sound. On the north from the Norwegian coast along Latitude 64° N. until it reaches the 1000 m. contour thereafter along this contour to Latitude 60°. On the west from Latitude 60° N. southward along Longitude 10° W. to the coast of Ireland, and along the north and east coasts of Ireland to Carnsore Point, thence in a straight line to Cape St. David along the English south and west coasts to Longitude 2° W. and from this intersection along 2° W. to Cape La Hague.

Atlantic Committee.

Between the latitudes of Rockall and the Equator and west of the western limits of the Near Northern Seas area and the European and African coast lines.

Baltic-Belt Seas Committee.

The Baltic and Belt Seas south and east of the 1946 Fisheries Convention boundary.

4. Publications.

In view of the enormous bulk of papers submitted to the Council Meeting it was decided to put a limit to the size of papers accepted for duplication at the Central Office and Recommendation 2 was carried.

Mr. Dobson drew attention to a memorandum on distribution of publications submitted by the General Secretary to the Bureau members; a revision of the

free distribution list was necessary and the matter was referred to the Editorial Committee.

5. Reports of Committees and Sub-Committees.

The reports and recommendations of the Committees were discussed and passed at the third session, special emphasis being laid upon those dealing with publications and meetings.

Attention was drawn to a recommendation from the Herring Sub-Committee regarding the discontinuation of the Herring Charts agreed upon in 1953; difficulties in providing the necessary information had been too great and it had been agreed to abandon the project.

The recommendation of the Statistical Committee was adopted as a special recommendation of the Consultative Committee. (Recommendation 3).

After a discussion regarding the cost involved in arranging a meeting of the two sub-committees set up under the Hydrographical Committee Recommendation 6 was passed.

It was further resolved that all papers submitted to the three Special Scientific Meetings should be printed in the series *Rapports et Procès-Verbaux*. The Chairman congratulated the conveners on the great success of their meetings. Recommendation 7 was passed.

6. F.A.O. Proposition.

It was agreed that all possible help should be given to further the F.A.O. plans of a world survey of aquatic resources (see Appendix, p. 19). Recommendations 4 and 5 were carried.

7. Nominations and Elections.

Following the Committee's decision to rearrange the Council's committees the following Chairmen were elected:— Dr. Å. V. Tåning: *Distant Northern Seas*; Dr J. Hult: *Near Northern Seas*; Dr. Aa. J. C. Jensen: *Baltic-Belt Seas*; Dr. J. Furnestin: *Atlantic Committee*; Dr. C. E. Lucas: *Comparative Fishing*; Mr. G. Rollefsen: *Gadoid Fish*; Dr. J. Cuesta: *Sardine Committee*; Prof. F. Frade: *Scombriform Fish*.

Dr. J. Lundbeck was appointed Chairman of the Statistical Committee as successor to Dr. Rosén.

The new scheme of committees, it was realized, would also result in a change in membership of the Liaison Committee. It was considered desirable that all members of the said committee should take part in the meetings of the Permanent Commission and there was a short discussion on how work could be carried out in close contact with this organization in case a member of the Liaison Committee was not also a member of the Permanent Commission. Recommendation 1e was adopted.

The election and re-election of the following Editors was proposed: the General Secretary Editor of the *Annales Biologiques* and *Bulletin Statistique*; Cdr. J. R. Lumby, *Journal du Conseil* and Dr. G. Thorson and Mr. F. S. Russell *Fiches d'Identification du Zooplancton*.

Mr. R. S. Wimpenny was re-elected Chairman of the Consultative Committee.

II. Recommendations.

1. Organization.

a) The Committee resolved that in view of the changing needs of time, whereby a greater emphasis be given to functional activities two new committees be set up, concerning (i) Gadoid Fish and (ii) Comparative Fishing.

b) That, in order to permit the formation of these committees without extending unduly the work of the Council (i) the North-Eastern and North-Western Sub-Committees be combined into a Distant Northern Seas Committee, and (ii) the North Sea, the Transition and the Baltic Committees be replaced by two committees, the Near Northern Seas Committee and the Baltic-Belt Seas Committee with appropriate adjustment of their boundaries.

c) It was further agreed that the two sub-committees under the Atlantic Committee be changed to full committees: the Sardine Committee and the Scombriform Fish Committee.

d) It was also decided that the Northern Seas Committee and the Pelagic Committee be abolished in view of the rearrangement of committees already made.

e) The Liaison Committee should consist of the following members: the Chairmen of the Consultative Committee, the Distant Northern Seas, the Near Northern Seas, the Atlantic, the Gadoid Fish, and the Comparative Fishing Committees.

2. Publications.

It was agreed that the Secretariat should be instructed not to accept contributions for duplication longer than 3000 words[1]) and tables and/or illustrations only so far as absolutely necessary to the understanding of the text.

3. Action for the Bureau.

It was resolved that the Bureau should arrange for the Council to ask the Danish Foreign Office to approach member governments and suggest that the statistics asked for by the Council should be produced by 1st September following the year to which they relate.

4. Cooperation with F.A.O.

The Committee resolved to place such information and publications at the disposal of the F.A.O. plans for a world survey of living aquatic resources as may be available, and also to ask the Secretariat to put the F.A.O. organization of the survey of aquatic resources into touch with such expert members of the Council as would be of assistance to their plans.

5. Recommendation to F.A.O.

The Committee has heard with appreciation that F.A.O. is considering the possibility of providing a more extensive world bibliographic and abstracting

[1]) Changed by the Bureau to 2000 words.

service with an annual summary and feels that if this step can be taken it would be of great value.

6. Intermediate Meetings.

The Committee approved of Recommendations 1 and 2 of the Hydrographical Committee that provision be made for the Sub-Committees on (i) the preparation of final mean charts of surface temperature and salinities and (ii) for the revision of the present standard method of salinity determination to meet, if necessary, prior to the next assembly of the Council in order that they may report at the assembly. It was not thought that the expenditure would involve more than 1500 kr. of the Council's funds.

7. Papers read at the Special Scientific Meetings.

It was agreed that the contributions to the Special Scientific Meetings should be published subject to careful preliminary editing by the Conveners and Reporters.

Reports and Programmes of Committees and Sub-Committees.

North-Eastern Area Sub-Committee.

Chairman: Mr. G. Rollefsen.

I. Proceedings.

The Chairman opened the meeting and welcomed the members, experts, observers, and visitors present.

In the list of members no alterations were made. The administrative report and the *Annales Biologiques* were presented and adopted.

In accordance with the recommendation from the Consultative Committee (regarding the reconstruction of Committees) which provided for the merging of the North-Eastern and North-Western Area Sub-Committees into one Committee for Distant Northern Seas and the establishment of a new Committee on Gadoid Fish a Chairman had to be elected for each of these two new committees.

Dr. Å. Vedel Tåning was elected Chairman for the Distant Northern Seas Committee and Mr. G. Rollefsen for the Gadoid Fish Committee.

II. Communications.

A paper on "Investigations on the haddock populations in Arcto-Norwegian Waters" by Gunnar Sætersdal was read by Mr. G. Dannevig who also presented his own investigations on:—

1. "Comparative experiments with various methods for attaching the hydrostatic tag to the cod," and
2. "Returns of tags from Lofoten in relation to the output of the fishery."

Mr. G. Rollefsen reported on fishing experiments comparing the catch of trawls of 110 and 150 mm. mesh-size.

Mr. R. J. H. Beverton reported on the British investigations in the Barents Sea.

All the papers were followed by discussions.

III. Programme of Work.

The programmes of work of the countries working in the area were presented and to avoid unnecessary duplication the cruise leaders from the different countries were asked to cooperate, and agree by correspondence as to their programmes.

North-Western Area Sub-Committee.

Chairman: Dr. Á. Vedel Tåning.

I. Proceedings.

The Chairman welcomed members and guests, in particular the Executive Secretary of I.C.N.A.F., Dr. E. M. Poulsen, and referred to the late Prof. J. Le Gall who had been a member of this Committee for several years.

The administrative report and the *Annales Biologiques* were adopted.

Owing to the rearrangement of the Committee, no Chairman was elected. At a joint meeting of this Committee with the North-Eastern Area Sub-Committee the Distant Northern Seas Committee was established.

The Chairman reviewed the work carried out by the North-Western Area Sub-Committee during the years 1923 to 1954.

It was agreed that the Committee should consider next year problems concerning the redfish in the whole Northern Seas Area.

II. Communications.

The following reports were submitted:—

F. Hermann: "Hydrography in West Greenland waters in 1954."

H. Einarsson: "General trends in the distribution of fish fry in Iceland waters."

P. M. Hansen: "The Danish investigations on the stock of cod on the banks off West Greenland in 1954."

J. Jónsson: "Cod marking in Icelandic waters in recent years."

III. Programme of Work.

It was agreed that the different countries should carry out the work specified below, the details being settled by correspondence.

Denmark: A cruise will be made by the "Dana" in Faroe and Greenland waters during the months of June-August. The section west of Ireland will be carried out in August. Other countries promised to operate the same section, if possible, in June as proposed by I.C.N.A.F. M/C "Ad. S. Jensen" will carry out inshore research work during the whole year.

England: No cruise will be made, but commercial catches will be sampled from Iceland.

France: "Président Théodore Tissier" will operate in the waters north-west of the British Islands in spring.

Germany: The programme of the research vessel "Anton Dohrn" is as follows:—

(a) May-June 1955: West Iceland to Greenland. Main objects: redfish, stock and distribution; fry of food fishes, distribution; plankton, hydrography. In charge: Dr. Kotthaus, Bremerhaven.

(b) September 1955: Greenland to West Iceland. Main objects: cod, stock and distribution; redfish, stock and distribution; hydrography. In charge: Dr. A. Meyer, Hamburg.

Iceland: The research vessel "Ægir" will make cruises in April-May, July-September, and October-November, covering all Icelandic waters, and including East Greenland and Jan Mayen waters. "María Júlía" will carry out shorter cruises chiefly for inshore investigations and cod-marking experiments. Commercial sampling of cod and redfish from East and West Greenland will be undertaken, and cooperation in the herring investigations will be continued.

Norway: Work will be carried out from commercial fishing vessels in West Greenland waters from 15. July to September, as previously. As regards herring research work, see the Herring Committee report.

Scotland: Programme to be arranged by correspondence.

IV. The Sub-Committee on the Faroe Question.

All members except the Netherlands member were present. M. Cl. Nédélec replaced Dr. Ancellin.

The Chairman presented the results of cod investigations carried out by Mr. J. S. Joensen, and outlined the present negotiations between Great Britain and the local Faroe Government on new fishing limits around the islands. These negotiations were not yet finished. The present situation was discussed and it was agreed that the Sub-Committee should meet next year for the final consideration of the problem. Some material on trawling operations would be procured from England meanwhile and an egg and larvae survey would be arranged.

North Sea Sub-Committee.

Chairman: Dr. C. E. Lucas.

I. Proceedings.

The Chairman opened the meeting by welcoming the members of the Sub-Committee and the various visitors. The records of attendance shows that all member countries were represented. The Sub-Committee took the opportunity to welcome Dr. Höglund as the new member for Sweden and asked him to convey to Dr. Molander their very good wishes for his happiness during retirement.

The Sub-Committee received advance copies of the *Annales Biologiques* and of the administrative report for 1953, and it was agreed that these provided a satisfactory account of the very considerable amount of work now proceeding in the North Sea.

The Sub-Committee was informed of the recent decision of the Consultative Committee whereby the Council's list of Committees was being adjusted. This involved elevating the Sub-Committee on Comparative Fishing to the status of a full committee, and displacing the North Sea Sub-Committee to provide a new and larger Near Northern Seas Committee. Dr. J. Hult was elected as Chairman of the Near Northern Seas Committee and Dr. C. E. Lucas as Chairman of the Comparative Fishing Committee.

II. Communications.

The following papers were read and discussed by the North Sea Sub-Committee:—

Hj. Bohl: "On the abundance and distribution of the fry of food fishes in the south-eastern North Sea during March 1953."

C. Nédélec: "Note on the output of the fishery at Utsire, 1951—52."

L. Birkett: "Standing crop mortality and yield of a Mactra patch."

Four other papers were communicated to the Comparative Fishing Sub-Committee:—

A. v. Brandt: "Investigations on fishing technology and their importance for the International Council for the Exploration of the Sea."

P. A. de Boer: "Trawl gear measurements obtained by underwater measurements."

J. Schärfe: "Measurements of trawling gear."

L. K. Boerema: "Some experiments on factors influencing mesh selection in trawl nets."

III. Programme of Work.

Advance copies of the 1955 programme for Belgium, England, Germany, Norway and Scotland were available to the members of the Sub-Committee, whilst Holland indicated that its programme would be a development of that already circulated for 1954. Representatives of other countries will make arrangements to forward copies of their programmes to the Secretariat for onward transmission to members as soon as they are available. The Sub-Committee was glad to hear that the new German research vessel was expected to be in commission early in 1955.

Transition Area Sub-Committee.

Chairman: Dr. Aa. J. C. Jensen.

I. Proceedings.

Advance copies of the administrative report and of the *Annales Biologiques* for 1953 were submitted to the contributors for corrections and amendment.

Progress made in the current work was reported upon and discussed.

The papers mentioned below were read and discussed. It was agreed that the investigations on the spawning of the mackerel carried out by international cooperation should be continued.

The present state of the stock of fish in the Baltic was discussed at a joint meeting of the Transition and Baltic Area Committees presided over by Dr. Hessle. It was the general opinion that international protection of the stock would be of great importance to the commercial fishery, and the necessary measures were discussed. Further intensification of investigations into the stock and a standardization of methods were planned.

II. Communications.

J. Knudsen: "The fluctuations in the stocks of plaice, flounder and dab in the western Baltic."

Aa. J. C. Jensen: "The recent development of the fishery for processing."

R. Kändler: "Distribution of mackerel eggs and larvae in the Belt Sea in June 1954."

Ole Bagge: "Danish investigations of the distribution of mackerel eggs; supplement to the investigations of Professor Kändler."

III. Programme of Work.

The programme of the previous year was revised in keeping with the reorganization of committees and the division of the area between the new Near Northern Seas and Baltic-Belt Seas Committees. It was specially stressed that the determination of phosphates and nitrates ought to be extended as far as possible.

Baltic Area Sub-Committee.

Chairman: Dr. Chr. Hessle.

I. Proceedings.

The Chairman opened the meeting and welcomed the members and visitors.

The Chairman gave the following information:

1. The regular collection of plankton samples at fixed stations in different parts of the Baltic which was decided at the meeting in Edinburgh in 1949 has been continued during the years 1950—1953 at one Danish, three Swedish, and three Finnish stations. According to Mr. Purasjoki in Helsingfors, who has undertaken the task of working up the material, the collecting was stopped at the end of 1953, as it seems suitable to await the results of the work hitherto done before a new series of sample collection is started.

2. The recommendation concerning the protection of the stock of salmon in the Baltic that the Committee made last year and which was adopted by the Council has, through the Danish Foreign Office, been transmitted to the governments of Denmark, Finland, Germany and Sweden.

On invitation of the Swedish government a conference was held in Stockholm on 18. and 19. January this year, with delegates from Denmark and Sweden. At this conference, which may be considered as preparatory, the delegates came to an understanding on most points, but, especially regarding the duration of the closed season for drift-lines, the opinions differed.

Afterwards also some discussions of a more informal nature took place between Sweden and Denmark on this matter. As, however, it is considered necessary or at least very desirable that Finland and Germany should also join a convention for the protection of the stock of salmon in the Baltic, the Swedish government has tried to bring about a conference with delegates from all four countries. The efforts in this respect, however, have so far not been successful.

Dr. Aa. J. C. Jensen was elected Chairman of the new Baltic-Belt Seas Committee.

II. Communications.

The following reports were presented and discussed:—

R. Kändler: "German salmon fishery in the Baltic."

Aa. J. C. Jensen: "The changes in the oxygen-free regions at Bornholm and their influence in the fisheries."

J. Knudsen: "A survey of the stock of cod, plaice and flounder in the Baltic" (read by Dr. Jensen).

Dr. A. R. Molander: "The rate of growth and the size of the plaice and the flounder in the Baltic" (read by Dr. Hessle).

III. Programme of Work.

It was agreed to readopt this year's programme for the coming year.

Atlantic Committee.

Acting Chairman: Dr. J. Furnestin.

I. Proceedings.

Dr. Furnestin paid homage to the memory of the late Prof. Le Gall, Chairman of the Committee.

The administrative report was adopted.

Dr. J. Furnestin was elected Chairman.

II. Communications.

J. M. Navaz: "The anchovy of the Biscayan coast, 1950—53."

R. Gilet: "Environment of the marine phytoplankton. Preliminary note on the variations in the dissolved oxygen contents."

L. Faure: "Hydrographic observations of the tunny fisheries in June."

J. Fleury: "Notes on plankton."

L. Bourdillon-Casanova: "On the presence of *Porcellana bluteli* in the Gulf of Marseille and the larval development of this species."

III. Recommendation and Programme of Work.

The members of the Atlantic Committee unanimously recommended that the Committee with its two Sub-Committees should be transformed in the following manner:—

The European Atlantic and the African Atlantic Slope Sub-Committees which up till now had existed on a geographical plan, should hereafter be based on a biological one. Their activities should solely bear upon the study of two marine groups:—

the Clupeiform Fish (herring and sprat excepted) and the Scombriform Fish, whose economic importance could be compared to those of the herring and the gadoid fishes.

These two sub-committees should thus become: a) the Atlantic Sub-Committee of the Clupeiform Fish (herring and sprat excepted) and b) the Scombriform Fish Sub-Committee.

The Atlantic Committee should be maintained. The Committee co-ordinates the programme of work for the two sub-committees. It is charged with all research work within the geographical limits of the Atlantic Slope Committee (from Rockall to Equator) except the study of the clupeiform and scombriform fish.

This new arrangement makes it easier to draw up programmes, allows for closer contact between scientists, and for work carried out more efficiently.

European Atlantic Slope Sub-Committee.

Chairman: Dr. J. Cuesta.

I. Proceedings.

The Chairman regretted the passing of Prof. Le Gall and Dr. L. Bellón.

The administrative report was adopted.

The programme of work for 1954—55 was discussed.

Dr. J. Cuesta was re-elected Chairman.

II. Communications.

W. C. Hodgson: "The pilchard along the English coasts." (Verbal communication).

R. Letaconnoux: "The pilchard from the centre of the Biscayan Bay." (Ann. Biol.).

J. M. Navaz: "The pilchard from the Iberian coast." (Ann. Biol.).

A. de M. Ramalho: "The pilchard from the coast of Portugal in 1953 (Ann. Biol.)—additional observations made until September 1954."

R. Coupé: "Hydrography and biology of the Moroccan pilchard."

J. Furnestin: "Note on the Mauritanian pilchard."

III. Recommendation

See the recommendation of the Atlantic Committee.

African Slope Sub-Committee.

Chairman: Dr. J. Furnestin.

I. Proceedings.

Dr. Furnestin, relinquishing the chairmanship after three years, was replaced by Prof. F. Frade, unanimously elected by the members present.

II. Communications.

J. M. Pérès & J. Picard: "Preliminary note on the survey made by the research vessel "Calypso" on the Sicilian-Tunisean shelf."

E. Postel: "Annual variations in the hydrographic conditions outside the Cap Vert peninsula."

R. Coupé: "Note on two Sparidae from the Moroccan coast, *Pagellus centrodontus* Val. and *Pagellus mormyrus* L."

R. Coupé: "A bipartite key for the Sparidae of the species *Pagellus* from Moroccan waters."

Cl. Maurin: "Additional note on the black hake (*Merluccius senegalensis* Cadenat)."

Dr. Le Danois presented a summary on our present knowledge of the yellow fin tuna (*Thunnus albacora* Bon.).

III. Programme of Work.

The African Slope Sub-Committee, which is becoming the Scombriform Fish Committee, asked the Chairman, Prof. F. Frade, to draw up a programme for the study of this marine group.

IV. Recommendation.

See the recommendation of the Atlantic Committee.

Herring Sub-Committee.

Chairman: Dr. W. C. Hodgson.

I. Proceedings.

The list of members was checked and no changes were made. The administrative report and the *Annales Biologiques* were presented, and, subject to certain corrections to the latter, were adopted.

The Chairman reported on the work of the Editorial Committee which met at Copenhagen in March 1954 to prepare the echo-sounding report and afterwards he presented the completed manuscript for publication (Recommendation 2, 1953).

Reports were received of the work done by each country during the year and a discussion took place on the plan to co-ordinate information from the echo-soundings for herring in the North Sea (Recommendation 3, 1953).

Dr. W. C. Hodgson was re-elected Chairman.

II. Communications.

Reports on various aspects of the herring investigations were submitted at the meeting by E. Bertelsen, D. H. Cushing, H. Einarsson, Árni Friðriksson, W. C. Hodgson, U. Stefánsson. Prof. Dollfus read an interesting account of his researches into the parasites of the herring.

III. Recommendations.

1. In view of the difficulty in providing the necessary information for the preparation of the Herring Charts, proposed at the 1952 meeting, it is recommended that the project be abandoned.
2. The Herring Committee recommends that echo-sounding data on herrings which are now being collected by each country in the course of each year, be submitted to the Chairman of the Herring Committee for collective assessment so as to provide the opportunity of estimating the usefulness of this source of information in investigations of herring biology.
3. It is recommended that countries which are interested commercially in the Dogger Bank and East Channel herring fisheries should carry out tagging experiments at these places.

Salmon and Trout Committee.

Chairman: Dr. A. E. J. Went.

I. Proceedings.

The Chairman welcomed the members and guests and the list of members was checked.

Dr. A. E. J. Went was re-elected Chairman.

II. Communications.

Reports on the progress of work in the different countries were made, and the following papers were submitted and discussed:—

A. Swain, I. R. H. Allan and W. G. Hartly (England) and K. H. Balmain and W. M. Shearer (Scotland): "East coast sea trout tagging experiments."

W. M. Shearer: "Tagging experiments at Rockall near Montrose, Scotland, May-August 1954."

Inger Bohus Jensen: "Transplantation experiments with rainbow trout into brackish waters."

R. Vibert: "Tagging of young salmon smolts in France."

A. E. J. Went: "Tagging of Irish drift-net salmon."

A full discussion took place on the effectiveness of the various types of smolt tags and it was generally agreed that comparative tests under identical conditions of the different types of tags were desirable.

III. Visits.

The Committee had a pleasant and instructive visit to the "Station d'Hydrobiologie appliquée du Paraclet" on the River Somme, about 130 km. from Paris. The Committee desires to offer its thanks to its French colleagues for the success of the visit and to "Le Conseil supérieur de la Pêche" for the entertainment at Amiens on that occasion.

IV. Programme of Work.

The Committee resolved that tagging of salmon and sea trout should be continued on the lines laid down at previous meetings with particular reference to clean fish in the sea and smolts. In suitable localities smolts should be tagged under identical conditions with different types of tags in order to compare their effectiveness.

Shellfish Committee.

Chairman: Dr. B. Havinga.

I. Proceedings.

The Chairman welcomed the members and guests.

In the list of members Dr. H. Vilela has taken the place of Dr. A. de M. Ramalho and Mr. J. M. Navaz y Sanz that of Mr. J. Amengual.

The members were invited to submit any remarks on the administrative report and the *Annales Biologiques* to the Chairman.

Arrangements were made for the excursion to the centres of oyster and mussel culture on the Atlantic coast.

The programme for 1955 was discussed. It was evident that investigations are in progress in different countries on closely related subjects.

The Chairman emphasized the value of receiving programmes for 1955 in good time, in order to be able to coordinate them. It was agreed that a summary of the programmes should be circulated by the Chairman.

It appeared that investigations on *Nephrops norvegicus* are carried out on a modest scale in various countries, but that the species is nowhere important enough to warrant full-time research. It therefore was considered highly desirable to centralize all data on *Nephrops*. Lacking a specialist in this field, it was requested that all data on *Nephrops* should be sent to the Chairman.

Sanitary Control. Descriptions were received of the methods of sanitary control of shellfish used in the various member countries. It was decided that the various methods now in use should be compared. This will be done in England, the Netherlands and as far as possible in France. The results of these comparative investigations will be submitted to the 1955 meeting of the Shellfish Committee.

The Chairman drew attention to the increasing commercial importance of *Sertularia cupressina* and other kinds of "white weeds". It was decided that this matter, though strictly speaking not shellfish, should be dealt with by the Committee.

Dr. B. Havinga was re-elected as Chairman.

II. Communications.

The following papers were presented and discussed:—

H. J. Thomas: "Observations on the sex ratio and mortality rates in the lobster."

H. J. Thomas: "Observations on the recaptures of tagged lobsters in Scotland."

Both papers were read by Mr. McIntyre.

E. Ursin: "The queen (*Chlamys opercularis*) in Danish and Faroese waters."

R. H. Baird: "A preliminary report on a new type of commercial escallop dredge." (Read by Dr. H. A. Cole.)

H. Vilela: "Etat de maturation sexuelle des huîtres du Tage (*Gryphaea angulata* Lmk.)."

E. Leloup: "Recherches concernant *Nephrops norvegicus* en Belgique."

A film on the Dutch oyster industry was shown.

III. Recommendation.

Where stocks of shellfish, white weed included, are exploited in common by several nations it is recommended that there should be consultation with a view to devising, where necessary, uniform measures of conservation. Such consultation is especially desirable in respect of stocks of lobsters, *Nephrops*, *Pecten maximus* and white weed.

Hydrographical Committee.

Chairman: Prof. H. U. Sverdrup.

I. Proceedings.

The list of members was checked. As new French member Dr. J. Furnestin had been nominated (failing him M. P. Desbrosses). At the present meeting Sweden would be represented by Dr. F. Koczy.

The administrative report for 1953 was approved.

The Hydrographer's report on work carried out by the Service Hydrographique of the Council since the last meeting was presented.

In this connexion the Chairman stressed the importance of sending the data for the *Bulletin Hydrographique* to the Service Hydrographique as early as possible. A request to that effect had been sent to the adhering countries *via* official channels. At any case the data from one year should be delivered before the end of the following year.

Inclusion in the *Bulletin Hydrographique* of temperature data collected by the bathythermograph was discussed. An *ad hoc* Sub-Committee, consisting of Messrs. Carruthers, Hermann, and Tchernia, considered the matter and reported to the Committee. It was decided to postpone the decision to the next meeting of the Council. In the meantime the Service

Hydrographique should consider the various forms of reproduction of the data and collect information on the question.

Inclusion in the *Bulletin Hydrographique* of optical measurements on sea water was discussed. No decision was taken.

Preliminary plans for hydrographic work in the various countries were tabled.

The Hydrographer presented a survey of routine observations carried out along fixed lines or at fixed stations by research and commercial vessels, lightships etc.

Lt.-Cdr. LUMBY reported on the provisional mean charts of surface temperature and salinity under preparation in the Lowestoft laboratory.

The Committee proposed these charts to be distributed freely to the same extent as the *Synoptic Hydrographic Charts*.

To direct the work on the final mean charts to be prepared by the Service Hydrographique a Sub-Committee, consisting of Messrs. LUMBY (Chairman), DIETRICH and GROEN was set up. Recommendation 1 was carried.

Lt.-Cdr. LUMBY proposed to re-consider the standard international method for salinity determination, and read "A note on the use of a magnetic stirrer in the determination of the salinity of sea water by the Oxner-Knudsen method" by J. LONGWELL, of the Department of the Government Chemist, London.

To consider the question a Sub-Committee consisting of Messrs. HERMANN (Chairman), KALLE, KOCZY, LONGWELL and TCHERNIA was set up, with the Service Hydrographique to act as secretariat for the Sub-Committee. Recommendation 2 was carried.

The Chairman laid before the Committee a letter from the International Civil Aviation Organization in which attention was drawn to the availability of the North Atlantic Ocean Stations network for coordinated oceanographic studies.

Lt.-Cdr. LUMBY, Chairman of the International Association of Physical Oceanography's committee on weather ships, reported on work carried out from these ships. It was intended to set up an international programme to start with the International Geophysical Year (1957—58). This programme would be limited to bathythermograph measurements, however.

The Chairman informed the Committee that the International Association of Physical Oceanography had approached the Council with a proposal to intensify work on oceanic circulation during the International Geophysical Year.

A Sub-Committee consisting of Messrs. BÖHNECKE (Chairman), EGGVIN, GOUGENHEIM, and LUMBY was set up to consider the question and report to the next meeting of the Council.

Dr. KOCZY raised the question of an alteration in the standard observation depths recommended by the Council. The recommendation from October 1948 was amended to read as given in Recommendation 3.

Professor SVERDRUP was re-elected Chairman.

II. Communications.

The following lectures were given:—

G. DIETRICH: "Mixing processes in the waters of the southern North Sea."
Lt.-Cdr. LUMBY and the Chairman took part in the discussion.

J. EGGVIN: "Features from the circulation in the Norwegian Sea."
Messrs. LUMBY, TAIT, DEVOLD, CARRUTHERS, and the Chairman took part in the discussion.

R. JOHNSTON: "Biologically active compounds in the sea." (Presented by Dr. TAIT.)
Dr. CARRUTHERS took part in the discussion.

F. HERMANN: "Sea bottom temperatures as derived from resistance measurements on telegraph cables."
Dr. TAIT took part in the discussion.

III. Recommendations.

1. It is recommended that a Sub-Committee of three be established to consider the material available for the preparation of final mean charts of surface temperature and salinities within the area that is covered by the monthly charts, and to consider the methods by which such charts should be prepared.

It is also recommended that provision be made for this Sub-Committee to meet, if necessary, prior to the next assembly of the Council in order that it may report at the assembly.

2. It is recommended that a Sub-Committee of five be established to consider the revision of the present standard method of salinity determination by the Oxner-Knudsen method as described by HELGE THOMSEN in the *Bulletin Océanographique* of Monaco.

It is also recommended that provision be made for this Sub-Committee to meet, if necessary, prior to the next assembly of the Council in order that it may report at that assembly.

3. It is recommended that section d in the resolution of October 1948, dealing with standard observation depths, be amended to read:

d) That for the Baltic and that part of the Transition Area south of the latitude of Skagen, the following standard depths to 100 m. should be used: 0, 5, 10, 15, 20, 30, 40, 60, 70, 80, 100 metres.

Plankton Committee.

Chairman: Prof. T. Braarud.

I. Proceedings.

The reports on work done in 1953 were adopted. On the basis of a report from Dr. G. Thorson the progress in publishing the Plankton Identification Sheets was considered. It was decided to have next year a more extensive discussion of possible measures for obtaining more new manuscripts and having them printed quickly. The Committee expressed appreciation of the personal work which the Editor carried out this year in preparing the new sheets.

A plan of having papers on a special subject presented at the Committee's next meeting was discussed with the point in view of bringing specialists to the meeting who would otherwise not be able to attend.

The Committee proposed that Dr. G. Thorson and Mr. F. S. Russell be re-appointed Editor and Co-editor of the Plankton Identification Sheets for the ensuing year.

Prof. T. Braarud was re-elected Chairman.

II. Communications.

The following papers were read:—

J. H. Fraser: "The plankton of the waters approaching the British Isles in 1953."

Kr. Fr. Wiborg: "Plankton and hydrography in the Norwegian Sea."

L. Devèze: "Summary of the microbiology in the Bay of Marseille."

L. Devèze: "The decrease in organic matter represented by zooplankton by bacterial action."

T. Braarud: "Progress Report on electron microscope studies of coccolithophorids at Biological Laboratory, B, Oslo."

Statistical Committee.

In the Chair: Dr. A. E. J. Went.

I. Proceedings.

In the absence of the Chairman elected in Copenhagen in 1953, Dr. A. E. J. Went took the Chair in a temporary capacity.

The *Bulletin Statistique* for 1951 and 1952 published in February and September 1954 respectively were laid before the Committee. Dr. E. M. Poulsen referred to some differences between the material collected by I.C.E.S. and that for the same areas collected by I.C.N.A.F. Dr. Poulsen offered to investigate these differences with the General Secretary in Copenhagen, which offer was accepted by the Committee with thanks.

Concern was expressed at the delay in publishing statistics and various methods of eliminating delays were discussed. It was definitely agreed, however, that if final figures for the previous year could be produced by, say, September following it would be preferable to await such figures rather than publish provisional figures which require considerable correction later.

The Committee then proceeded to consider the memorandum prepared by the General Secretary. The Committee endorsed the General Secretary's recommendations and authorized him to approach member countries for statistics relating to effort, even if they related only to a limited number of species, limited areas, or a limited number of fishing methods.

Dr. Aa. J. C. Jensen suggested that some uniform methods of presenting statistics relating to fish caught for processing should be adopted throughout the Bulletin. He also raised the question of segregation of catches from the borders of the different areas. Dr. Jensen gave instances where species unknown or rare in the Baltic had been included in the statistics relating to that area. It was generally agreed that these two matters should be given further consideration by the General Secretary in consultation with Dr. Jensen.

A discussion took place on the advisability of having papers on the subject of the collection, compilation and use of statistics and it was agreed that the Consultative Committee should be asked to arrange time for such papers at future meetings of the Council.

The acting Chairman then proposed that Dr. J. Lundbeck of Germany be appointed Chairman for the ensuing year. Dr. Lundbeck was accordingly unanimously elected.

II. Recommendation.

It was resolved that the Bureau should ask the Danish Foreign Office to approach member governments and suggest that the statistics asked for by the Council should be produced by 1st September following the year to which they relate.

VERSION FRANÇAISE

Réunions Scientifiques Spéciales.

A. PROBLÈMES ET MÉTHODES D'ÉCHANTILLONAGE DES POPULATIONS DE POISSONS

Organisateur: M. G. Rollefsen; Rapporteur: M. B. B. Parrish.

I. Compte-rendu.

15 communications sont présentées englobant de nombreux aspects du problème de l'échantillonnage du stock de poisson.

Les communications sont rassemblées dans les groupes suivants:—

1. Théorie de base de l'échantillonnage;
2. Propriétés des engins d'échantillonnage et utilisation des statistiques commerciales;
3. Utilisation des données fournies par les échantillons capturés;
4. Méthodes d'échantillonnage et problèmes dans les différents pays.

Après une très large discussion sur les sujets des communications et sur les autres aspects du problème de l'échantillonnage, les Recommandations 1 et 2 sont adoptées.

Avant la clôture de la réunion le Dr. Kesteven de la F.A.O. et le Professeur G. M. Gerhardsen de la "Norges Handelshøgskola" développent devant les participants respectivement des aspects "mondiaux" et des aspects "économiques" du problème de l'échantillonnage.

Le Dr. Kesteven ayant souligné l'intérêt de l'objet de cette réunion une troisième recommandation (II, 3) est adoptée.

II. Recommandations.

1. Les participants de cette réunion s'accordent sur la nécessité d'établir des unités standardisées d'effort de pêche pour les différentes pêcheries des secteurs couverts par le Conseil. Ils pensent qu'une étude des unités appropriées peut être convenablement faite à une date rapprochée par le Comité des Pêches Comparées.

2. Cette réunion recommande que les communications présentées soient publiées *in extenso* sous la direction de l'Organisateur et du Rapporteur et qu'elles soient précédées d'un compte-rendu et d'une introduction rédigés par l'Organisateur.

3. La réunion note avec intérêt que la F.A.O. a l'intention de provoquer une réunion en 1956 ou 1957 où seront reçues et discutées des communications sur les engins de pêche et les réactions du poisson devant les engins, et désire attirer l'attention du Comité des Pêches Comparées sur ce projet.

B. TECHNIQUES ET RÉSULTATS DE MARQUAGE DU HARENG

Organisateur: Dr. W. C. Hodgson; Rapporteur: M. O. Aasen.

Les communications suivantes sont présentées et discutées:—

Olav Aasen: "Estimation de la concentration du stock des harengs d'hiver des eaux norvégiennes."

J. Ancellin: "Note sur le marquage des poissons au moyen de l'aiguille chirurgicale de Reverdin."

E. Bertelsen: "Marquages par le Danemark en Mer du Nord."

G. C. Bolster: "Expériences anglaises de marquages."

Á. Friðriksson: "Rapport sur les marquages de hareng en Islande."

Ch. Gilis: "Marquage de hareng en Belgique."

H. Höglund: "Expériences de marquage de hareng en Suède, 1949—53."

Aa. J. C. Jensen: "Marquages de hareng par le Danemark dans le Scaw, 1949—52."

J. C. Stevenson: "Les déplacements du hareng dans les eaux de la Colombie Britannique déterminés par les marquages (avec une description des méthodes de marquage et de recapture)."

H. Wood, B. B. Parrish et G. McPherson: "Revue des expériences de marquage de hareng par l'Ecosse 1948—53."

C. L'ÉLEVAGE DE L'HUÎTRE ET DE LA MOULE

Organisateur: Dr. B. Havinga; Rapporteur: Dr. H. A. Cole.

I. Compte-rendu.

Dix-sept rapports sont présentés à la réunion; tous sont lus et discutés à l'exception de 8, 9, 9a:—

1. M. Boury: "L'œuvre de Jean Coste et le développement de l'ostréiculture."
2. P. R. Walne: "Observations sur les expériences de reproduction de l'huître (*Ostrea edulis*) à Conway, 1939—1953."
3. P. Trochon: "Etude sur la reproduction de l'huître plate, *Ostrea edulis*, dans les claires de la région de Marennes—Oléron."
   Discussion des rapports 1—3.
4. B. Andreu & P. Arté: "Expériences préalables sur la fixation des larves et la croissance hivernale des jeunes huîtres (*O. edulis*) des Rias galiciennes."
5. M. Thiéblemont-Colson: "Utilisation en Morbihan du collecteur carton en vue du captage du naissain (*O. edulis*)."
6. H. J. Turner: "Expériences préliminaires sur la culture des bivalves en réservoir."

6a. H. A. Cole & D. A. Hancock: "Progrès sur les recherches ostréicoles en Grande-Bretagne de 1949—1954, avec les indications particulières sur le contrôle des parasites et maladies."
   Discussion des rapports 4—6a.

7. P. Korringa: "Biologie et culture de l'huître."
8. F. Fraga: "Variation saisonnière moyenne des constituants chimiques des moules (*M. edulis*)."
9. M. López-Benito: "Contenus chimiques des coquilles St.-Jacques (*Pecten jacobeus*)."
   Discussion des rapports 7—9.

9a. E. da Silva Graça, R. Carvalho Almeida & M. R. Melo Costa: "Composition chimique et valeur nutritive des huîtres portugaises."

10. H. Bouxin: "Observations sur le frai de *Mytilus edulis* var. *galloprovincialis* (Lmk.). Dates précises de frai. Facteurs provoquant l'émission de produits génitaux."
11. P. F. Meyer-Waarden: "Culture de la moule dans la Waddensea allemande."
12. B. Havinga: "Culture de la moule dans la Waddensea hollandaise."
13. H. Brienne: "Croissance des moules du Boulonnais."
    Discussion des rapports 10—13.
14. P. F. Meyer-Waarden & H. Mann: "Recherches allemandes en ce qui concerne *Mytilicola intestinalis* dans *Mytilus edulis* en 1953."
15. H. Mann: "L'influence de *Mytilicola intestinalis* (Copepoda parasitica) sur le développement des gonades de *Mytilus edulis*."
    Discussion des rapports 14—15.

II. Recommandation.

La réunion décide que les rapports présentés à la réunion spéciale sur la culture des huîtres et des moules seront publiés après avoir été revus en vue d'une édition convenable par l'Organisateur et le Rapporteur: Dr. Havinga et Dr. Cole.

RAPPORTS

Rapport et Recommandations du Comité Consultatif.

Président: M. R. S. Wimpenny.

I. Compte-rendu.

1. Le Président ouvre la séance en rendant hommage au regretté Professeur J. le Gall, dont le décès a surtout touché ce Comité auquel M. le Gall a été lié si étroitement. Le Président exprime ses souhaits de bienvenue à M. le Dr. Furnestin en sa qualité de Président intérimaire du Comité Atlantique et le félicite à l'occasion de sa nomination de Directeur de l'Institut Scientifique et Technique des Pêches Maritimes.

2. Rapport sur l'Avancement des Travaux.

Le Dr. W. C. Hodgson annonce aux membres que le travail sur l'écho-sondage des poissons est maintenant terminé et prêt à être publié. Le Président souligne que le groupe de travail est arrivé à une conclusion effective dans un délai très court et remercie M. le Dr. W. C. Hodgson pour sa contribution à ce résultat.

3. Remaniement des Comités.

L'exposé sur le remaniement des comités soumis aux membres avant la réunion du Conseil, contient trois questions principales:—

(a) La fusion des Sous-Comités des Secteurs Nord-Est et Nord-Ouest en un seul Comité des Mers Nordiques Lointaines;

(b) la suppression des Comités de la Mer du Nord, des Secteurs de Transition et de la Baltique remplacés par le Comité des Mers Nordiques Proches et le Comité des Mers Baltique-Belts;

(c) la création de deux comités nouveaux: un Comité des Poissons Gadoïdes et un Comité des Pêches Comparées.

Le Président demande aux membres de décider s'ils désirent apporter des modifications au remaniement proposé pour les comités. Après une discussion à laquelle prennent part MM. Täning, Went, Jensen et Lumby, la question est mise au vote et acceptée. La Recommandation 1 est adoptée.

A la seconde séance le Dr. Furnestin présente une recommandation du Comité Atlantique proposant la formation de deux comités nouveaux pour l'étude (i) des Clupéiformes (à l'exception du hareng et du sprat) et (ii) des Scombriformes, les deux comités devant remplacer les Sous-Comités Atlantiques Européen et Africain. La recommandation est adoptée. (Recommandation 1 c).

A la troisième séance le terme de "Comité des Poissons Clupéiformes" est changé en "Comité de la Sardine". La suppression des Comités Pélagique et Mers Nordique est acceptée. (Recommandation 1 d).

Afin d'établir la délimitation actuelle des nouveaux comités, un petit sous-comité *ad hoc* est créé, et à la deuxième séance du Comité Consultatif, les limites sont fixées comme suit:—

Comité des Mers Nordiques Lointaines.

Le secteur de l'Atlantique Nord, au nord de la latitude de Rockall et des limites septentrionales du secteur des Mers Nordiques Proches.

Comité des Mers Nordiques Proches.

Au sud et à l'est, les rivages du continent européen et les limites établies par la Convention des Pêches de 1946 au nord des Belts et du Sound; au nord, à partir de la côte norvégienne, le long du 64° L. N. jusqu'à la ligne des 1000 m. suivie jusqu'à la latitude 60° N. A l'ouest, depuis 60° N. vers le sud le long de la longitude 10° W. jusqu'à la côte d'Irlande, et le long de la côte nord et est d'Irlande jusqu'à la Pointe Carnsore. Puis, en ligne droite au Cap St. David et le long de la côte sud et ouest d'Angleterre jusqu'à la longitude 2° W. et de ce point le long du 2° W. jusqu'au Cap de la Hague.

Comité Atlantique.

Entre les latitudes de Rockall et l'Equateur et à l'ouest des limites du secteur des Mers Nordiques Proches et des côtes européennes et africaines.

Comité des Mers Baltique-Belts.

Les Mers Baltique et les Belts au sud et à l'est de la limite fixée par la Convention Internationale des Pêches de 1946.

4. Publications.

Etant donné le grand nombre des contributions présentées à la Réunion du Conseil, il est décidé de fixer une limite au volume des contributions qui doivent être polycopiées par le Bureau Central et la Recommandation 2 est adoptée.

M. Dobson attire l'attention des membres sur un mémorandum traitant de la distribution des publications et soumis aux membres du Bureau par le Secrétaire Général; une révision de la liste des exemplaires gratuits est nécessaire et la question est transmise au Comité Editorial.

5. Rapports des Comités et des Sous-Comités.

Les rapports et recommandations des Comités sont discutés et acceptés à la troisième séance; il est insisté sur les rapports concernant les publications et les réunions.

L'attention est attirée sur une proposition du Sous-Comité du Hareng concernant la discontinuité des Cartes du Hareng, comme convenu en 1953; les difficultés de se procurer les informations nécessaires ont été trop grandes et l'on a décidé d'abandonner le projet.

La recommandation du Comité Statistique est adoptée sous forme d'une recommandation spéciale du Comité Consultatif. (Recommandation 3).

Après une discussion des frais occasionnés par l'organisation d'une réunion des deux Sous-Comités institués à l'intérieur du Comité Hydrographique, la Recommandation 6 est adoptée.

Il est ensuite décidé que toutes les contributions présentées aux trois Réunions Scientifiques Spéciales seront imprimées dans la série des *Rapports et Procès-Verbaux*. Le Président félicite les organisateurs pour le grand succès de leurs séances. La Recommandation 7 est adoptée.

6. Proposition de la F.A.O.

Il est convenu que l'on aportera toute l'aide possible pour faire avancer les projets de la F.A.O. sur un recensement mondial des ressources aquatiques. Les Recommandations 4 et 5 sont adoptées.

7. Nominations et Elections.

Selon la décision prise par le Comité de remanier les comités du Conseil, les Présidents suivants sont élus: M. le Dr. Å. V. Tåning: *Comité des Mers Nordiques Lointaines;* M. le Dr. J. Hult: *Comité des Mers Nordiques Proches*; M. le Dr. Aa. J. C. Jensen: *Comité des Mers Baltique-Belts*; M. le Dr. J. Furnestin: *Comité Atlantique*; M. le Dr. C. E. Lucas: *Comité des Pêches Comparées*; M. G. Rollefsen: *Comité des Poissons Gadoïdes*; M. le Dr. J. Cuesta: *Comité de la Sardine*; M. le Prof. F. Frade: *Comité des Poissons Scombriformes.*

M. le Dr. J. Lundbeck est élu Président du Comité des Statistiques comme successeur du Dr. Rosén.

Il est reconnu que le nouveau système des comités amènera un changement dans la composition du Comité de Liaison. Il est souhaitable que tous les membres du comité précité assistent aux séances de la Commission Permanente, et l'on discute brièvement de la manière d'organiser le travail en liaison intime avec cette Commission, lorsqu'un membre du Comité de Liaison n'est pas également membre de la Commission Permanente. La Recommandation 1 e est adoptée.

L'élection et la réélection des éditeurs suivants sont proposées: le Secrétaire Général, éditeur des *Annales Biologiques* et du *Bulletin Statistique*; M. le Cdr. Lumby, éditeur du *Journal du Conseil*, M. le Dr. G. Thorson et M. F. S. Russell éditeurs des *Fiches d'Identification du Zooplankton.*

M. R. S. Wimpenny est réélu Président.

II. Recommandations.

I. Organisation.

Le Comité décide:—

(a) Etant donné les besoins actuels qui donnent une plus grande importance aux activités par sujets, deux nouveaux comités sont créés concernant (i) les Poissons Gadoïdes et (ii) les Pêches Comparées;

(b) afin de permettre l'activité de ces comités sans augmenter indûment le travail du Conseil, (i) les Sous-Comités des Secteurs Nord-Est et Nord-Ouest sont réunis en un seul Comité des Mers Nordiques Lointaines et (ii) les Comités de la Mer du Nord, des Secteurs Transition et Baltique sont remplacés par deux comités: le Comité des Mers Nordiques Proches et le Comité des Mers Baltique-Belts, dont les limites sont réajustées;

(c) les deux sous-comités dépendant du Comité Atlantique sont transformés en comités: le Comité de la Sardine et le Comité des Poissons Scombriformes;

(d) les Comités des Mers Nordiques et Pélagique sont supprimés par suite du remaniement des comités;

(e) le Comité de Liaison est composé des membres suivants: les Présidents du Comité Consultatif, des Comités des Mers Nordiques Lointaines, des Mers Nordiques Proches, de l'Atlantique, des Poissons Gadoïdes et des Pêches Comparées.

2. Publications.

Il est décidé d'informer le Secrétariat de ne pas accepter pour la polycopie des contributions contenant plus de 3000 mots[1]) et de n'accepter des tableaux ou des illustrations que lorsque ceux-ci sont absolument nécessaires à la compréhension du texte.

3. Démarches pour le Bureau.

Il est convenu que le Bureau prie le Ministère des Affaires Etrangères du Danemark d'entrer en relation avec les gouvernements faisant partie du Conseil pour demander que les statistiques réclamées par le Conseil soient fournies avant le 1er Septembre qui suit l'année à laquelle elles se rapportent.

4. Coopération avec la F.A.O.

Le Comité décide de mettre à la disposition de la F.A.O. les informations et les publications concernant son projet d'un recensement mondial des ressources aquatiques et de demander au Secrétariat de mettre en contact l'organisation qui s'occupe de ce travail à la F.A.O. avec des membres qualifiés du Conseil qui pourront leur être utiles pour ce projet.

5. Recommandation à la F.A.O.

Le Comité note avec intérêt que la F.A.O. envisage de donner une plus grande extension au service de

[1]) Modifié par le Bureau à 2000 mots.

la bibliographie mondiale et des résumés en publiant un sommaire annuel. Le Comité estime que la réalisation d'un tel projet serait d'une grande valeur.

6. Réunions Intermédiaires.

Le Comité approuve les Recommandations 1 et 2 du Comité Hydrographique concernant les deux Sous-Comités travaillant (i) à la préparation des cartes définitives de moyennes de température et de salinité de surface et (ii) à la révision de la méthode standard actuelle de détermination de la salinité. Des mesures seront prises pour que les Sous-Comités se réunissent, si nécessaire, avant la prochaine assemblée du Conseil, afin qu'ils puissent rendre compte de leurs travaux à l'assemblée. On pense que les frais relatifs à ces réunions ne dépasseront pas 1500 Kr. à prendre sur les fonds du Conseil.

7. Contributions présentées aux Réunions Scientifiques Spéciales.

Il est décidé que les contributions aux Réunions Scientifiques Spéciales seront imprimées après avoir été examinées pour corrections par les Organisateurs et Rapporteurs.

Rapports et Programmes des Comités et des Sous-Comités.

Sous-Comité du Secteur Nord-Est.

Président: M. G. Rollefsen.

I. Compte-rendu.

Le Président ouvre la réunion et souhaite la bienvenue aux membres, aux experts, aux observateurs et aux visiteurs présents.

Aucune modification n'est apportée à la liste des membres. Le rapport administratif et les *Annales Biologiques* sont présentés et adoptés.

En accord avec la recommandation du Comité Consultatif (concernant la reconstitution des Comités) qui prévoit la réunion des Sous-Comités des secteurs Nord-Est et Nord-Ouest en un seul Comité des Mers Nordiques Lointaines, et la création d'un nouveau Comité des Poissons Gadoïdes, un Président doit être élu pour chacun des deux nouveaux comités.

Le Dr. Å. Vedel Tåning est élu Président du Comité des Mers Nordiques Lointaines et M. G. Rollefsen Président du Comité des Poissons Gadoïdes.

II. Communications.

Un rapport concernant les "Recherches sur les populations d'Eglefin dans les eaux arcto-norvégiennes" par Gunnar Sætersdal est lu par M. G. Dannevig qui présente également ses propres recherches sur:—

1. "Comparaison des différentes méthodes de fixation de la marque hydrostatique à la morue," et
2. "Restitutions de marques provenant des Lofoten en rapport avec le rendement de la pêche."

M. G. Rollefsen fait un rapport sur des expériences de pêche comparant les captures des chaluts de mailles de 110 et 150 mm.

M. R. J. H. Beverton fait un exposé sur les recherches britanniques dans la Mer de Barentz.

Tous les exposés sont suivis de discussions.

III. Programme de Travail.

Les programmes de travail des pays opérant dans le secteur sont présentés, et pour permettre une coordination utile il est demandé aux responsables des croisières des différents pays de coopérer et de se mettre d'accord par correspondance en ce qui concerne leurs programmes.

Sous-Comité du Secteur Nord-Ouest.

Président: Dr. Å. Vedel Tåning.

I. Compte-rendu.

Le Président souhaite la bienvenue aux membres et aux personnes invitées, en particulier au Secrétaire exécutif de l'I.C.N.A.F., le Dr. E. M. Poulsen; il fait mention du décès du Prof. J. Le Gall qui a été membre de ce Comité pendant plusieurs années.

Le rapport administratif et les *Annales Biologiques* sont adoptés.

En raison de la modification du Comité, aucun Président n'est élu. Lors d'une réunion commune du Comité avec le Sous-Comité du Secteur Nord-Est, le Comité des Mers Nordiques Lointaines a été établi.

Le Président passe en revue le travail exécuté par le Sous-Comité du Secteur Nord-Ouest pendant la période 1923—1954.

Il est convenu qu'il faut que le Comité prenne en considération l'année prochaine les problèmes concernant le *Sebastes* dans l'ensemble du Secteur des Mers Nordiques.

II. Communications.

Les rapports suivants sont présentés:—

M. F. Hermann: "Hydrologie des eaux du Groënland Occidental en 1954."

Dr. H. Einarsson: "Les tendances générales de la distribution des larves de poissons dans les eaux d'Islande."

Dr. P. M. Hansen: "Recherches danoises sur le stock de morue des bancs au large du Groënland Occidental en 1954."

M. J. Jónsson: "Marquages de morue dans les eaux islandaises pendant les dernières années."

III. Programme de Travail.

Il est convenu qu'il faut que les différents pays mettent à exécution le travail ci-dessous indiqué, les détails étant fixés par correspondance.

Danemark: Une croisière sera faite par le "Dana" dans les eaux des Féroés et du Groënland durant la période de Juin à Août. La section à l'ouest de l'Irlande sera effectuée en Août. Les autres pays promettent d'effectuer la même section, si possible en Juin, comme le propose l'I.N.A.C.F. M/C "Ad. S. Jensen" mettra à exécution le travail de recherche dans les eaux côtières pendant toute l'année.

Angleterre: Aucune croisière ne sera faite, mais des captures commerciales en provenance d'Islande seront échantillonnées.

France: Le "Président Théodore Tissier" travaillera dans les eaux situées au nord-ouest des Iles Britanniques, au printemps.

Allemagne: Le programme du navire de recherche "Anton Dorn" est le suivant:

(a) Mai-Juin 1955: de l'ouest de l'Islande au Groënland. Buts principaux: *Sebastes*, stock et distribution; larves des poissons comestibles, distribution; plancton, hydrologie. Chef de mission: Dr. Kotthaus, Bremerhaven.

(b) Septembre 1955: du Groënland à l'Islande ouest. Buts principaux: Morue, stock et distribution; *Sebastes*, stock et distribution; hydrologie. Chef de mission: Dr. A. Meyer, Hamburg.

Islande: Le navire de recherche "Aegir" effectuera des croisières en Avril-Mai, Juillet-Septembre et Octobre-Novembre. Ces croisières couvriront toutes les eaux islandaises et aussi les eaux du Groënland Oriental de Jan Mayen. "María-Júlía" accomplira principalement des croisières plus courtes pour des recherches côtières et des expériences de marquage de morue. L'échantillonnage commercial de la morue et des *Sebastes* du Groënland Oriental et Occidental sera entrepris et la coopération dans les recherches sur le hareng sera poursuivie.

Norvège: Des bateaux de pêche iront exécuté de travail dans les eaux du Groënland Occidental pendant la période du 15 Juillet à Septembre, comme précédemment. En ce qui concerne le travail de recherche sur le hareng, voir rapport du Comité du Hareng.

Ecosse: Programme à établir par correspondance.

IV. Le Sous-Comité de la Question des Féroés.

Tous les membres sont présents sauf le représentant des Pays-Bas. M. Cl. Nédélec remplace le Dr. Ancellin.

Le Président présente les résultats des recherches sur la morue accomplies par M. J. S. Joensen, et donne un aperçu des négociations actuelles entre la Grande-Bretagne et le Gouvernement local des îles Féroés sur les nouvelles limites de pêche autour des îles. Ces négociations ne sont pas encore terminées. La situation présente est discutée et il est convenu, qu'il faut que le Sous-Comité se réunisse l'an prochain pour l'examen final du problème. Quelque matériel concernant les opérations de chalutage sera fourni par l'Angleterre en attendant et une étude des œufs et des larves sera commencée.

Sous-Comité de la Mer du Nord.

Président: Dr. C. E. Lucas.

I. Compte-rendu.

Le Président ouvre la réunion en souhaitant la bienvenue aux membres du Sous-Comité et aux divers visiteurs. Le pointage des personnes assistant à la réunion montre que les membres de tous les pays sont représentés. Le Sous-Comité profite de l'occasion pour saluer le Dr. Höglund en tant que nouveau représentant de la Suède et le prie de transmettre les meilleurs vœux du Sous-Comité au Dr. Molander pour sa retraite.

Des épreuves des *Annales Biologiques* et du rapport administratif pour 1953 sont à la disposition du Sous-Comité, et il est reconnu que ces épreuves fournissent un rapport satisfaisant des travaux très importants actuellement en cours en Mer du Nord.

Le Sous-Comité est informé de la récente décision du Comité Consultatif modifiant la liste des comités du Conseil. Cette modification entraîne l'élévation à l'état de comité (sans restriction) du Sous-Comité des Pêches Comparées, et le remplacement du Sous-Comité de la Mer du Nord par un nouveau et plus important Comité des Mers Nordiques Proches. Le Dr. J. Hult est élu Président du Comité des Mers Nordiques Proches et le Dr. C. E. Lucas est élu Président du Comité des Pêches Comparées.

II. Communications.

Les rapports suivants sont présentés et discutés par le Sous-Comité de la Mer du Nord:—

Hj. Bohl: "Sur l'abondance et la distribution des larves des poissons comestibles dans le sud-est de la Mer du Nord en Mars 1953."

Cl. Nédélec: "Étude des rendements de pêche à Utsire, 1951—1952."

L. Birkett: "Mortalité et fluctuations d'une population de Mactra."

Quatre autres rapports sont communiqués au Sous-Comité des Pêches Comparées:—

A. v. Brandt: "Recherches sur la technologie des pêches et leur importance pour le Conseil Permanent International pour l'Exploration de la Mer."

P. A. de Boer: "Dimensions du chalut en pêche obtenues à l'aide de mesures sous-marines."

J. Schärfe: "Dimensions du chalut en pêche."

L. K. Boerema: "Quelques expériences sur les facteurs influençant la selection par la maille dans les chaluts."

III. Programme de Travail.

Des épreuves des programmes 1955 pour la Belgique, l'Angleterre, l'Allemagne, la Norvège et l'Ecosse, sont mises à la disposition des membres du Sous-Comité, tandis que la Hollande indique que son programme sera un développement de celui de 1954. Les représentants des autres nations prendront leurs dispositions pour faire parvenir des copies de leur programme au Secrétariat d'où elles seront transmises aux membres dès qu'elles seront disponibles.

Le Sous-Comité est heureux d'apprendre que le nouveau navire de recherche allemand sera sans doute en service au début de 1955.

Comité Atlantique.

Président par intérim: Dr. J. Furnestin.

I. Compte-rendu.

Hommage est rendu au regretté J. Le Gall, Président du Comité.

Le rapport administratif est adopté.

Le Dr. J. Furnestin est élu Président.

II. Communications.

J. M. Navaz: "L'anchois de la côte basque 1950—1953."

R. Gilet: "L'eau du milieu phytal marin, note préliminaire sur les variations de sa teneur en oxygène dissous."

L. Faure: "Observations hydrologiques en Juin sur les pêcheries de germon."

J. Fleury: "Notes planctoniques."

L. Bourdillon-Casanova: "Note sur la présence de *Porcellana bluteli* dans le Golfe de Marseille et sur le développement larvaire de cette espèce."

III. Programme de Travail et Recommandation.

Le Comité Atlantique recommande, à l'unanimité des membres présents, que le Comité lui-même et les deux Sous-Comités, Européen et Africain, qui l'accompagnent, soient transformés.

Le Sous-Comité Européen et le Sous-Comité Africain, constitués jusqu'ici sur un plan géographique, devraient l'être dorénavant sur un plan biologique. Leur activité porterait uniquement sur l'étude de deux groupes ichthyologiques:—

Clupéiformes (à l'exception du hareng et du sprat) et Scombriformes, dont l'importance économique considérable peut être comparée à celle du hareng et des Gadidés.

Ces deux Sous-Comités deviendraient ainsi:—

(a) le Sous-Comité des Clupéiformes atlantiques (à l'exception du hareng et du sprat)[1]);
(b) le Sous-Comité des Scombriformes.

[1]) Changé par le Comité Consultatif en "Comité de la Sardine".

Le Comité Atlantique serait maintenu. Il coordonnerait les programmes des deux Sous-Comités précités. Il serait chargé de toutes les recherches, à l'exception de celles des Clupéiformes et des Scombriformes, dans l'ensemble des secteurs géographiques européen et africain (de Rockall à l'Equateur).

Ces nouvelles dispositions permettraient une plus grande simplicité dans l'organisation des programmes, un contact plus direct entre spécialistes, et un travail plus efficace.

Sous-Comité Atlantique Européen.

Président: Dr. J. Cuesta.

I. Compte-rendu.

La séance ouverte, le Président prononce quelques paroles d'hommage à la mémoire du Professeur Jean le Gall et du Dr. L. Bellón.

Quelques modifications sont établies dans la composition du Comité.

Le rapport administratif est adopté.

Un exposé est fait par les représentants des pays membres sur le programme des travaux pour 1954—1955.

Le Dr. J. Cuesta est réélu Président.

II. Communications.

W. C. Hodgson: "Communication verbale sur la sardine de la côte anglaise."

R. Letaconnoux: "La sardine du centre du Golfe de Gascogne." (Ann. Biol.).

J. M. Navaz: "La sardine de la côte basque." (Ann. Biol.).

A. de M. Ramalho: "La sardine de la côte du Portugal en 1953 (Ann. Biol.) — en ajoutant les observations faites dans l'année actuelle jusqu'au mois de Septembre."

R. Coupé: "Hydrologie et biologie de la sardine marocaine."

J. Furnestin: "Note sur la sardine de Mauritanie."

III. Recommandation.

Se référer à la recommandation du Comité Atlantique.

Sous-Comité Atlantique Africain.

Président: Dr. J. Furnestin.

I. Compte-rendu.

Le Dr. Furnestin, démissionnaire après trois années de fonction, est remplacé par le Professeur F. Frade, élu à l'unanimité des membres présents.

II. Communications.

J. M. Pérès & J. Picard: "Aperçu préliminaire sur la campagne de recherches effectuée par la "Calypso" sur le seuil siculo-tunisien."

E. Postel: "Variations annuelles des conditions hydrologiques au large de la presqu'île du Cap Vert."

R. Coupé: "Notes sur deux Sparidés de la côte marocaine *Pagellus centrodontus* Val. et *Pagellus mormyrus* L."

R. Coupé: "Une clé dichotomique pour les Sparidés du genre *Pagellus* des eaux marocaines."

Cl. Maurin: "Note complémentaire sur le merlu noir (*Merluccius senegalensis* Cadenat)."

Le Dr. Le Danois présente un résumé de nos connaissances actuelles sur l'albacore ou yellow fin tuna (*Thunnus albacora* Bon.).

III. Programme de Travail.

Le Sous-Comité Africain devenant le Sous-Comité des Scombriformes demande à son Président, le Professeur F. Frade, d'établir un programme d'étude pour ce groupe ichthyologique.

IV. Recommandation.

Voir la recommandation du Comité Atlantique.

Sous-Comité du Hareng.

Président: Dr. W. C. Hodgson.

I. Compte-rendu.

La liste des membres est arrêtée sans aucun changement. Le rapport administratif et les *Annales Biologiques* sont présentés et adoptés sous réserve de certaines corrections.

Le Président rend compte du travail du Comité Editorial qui s'est réuni à Copenhague en Mars 1954 pour préparer le rapport sur les écho-sondages; puis, le Président présente le manuscrit complété pour la publication. (Recommandation 2, 1953).

Les rapports sur le travail fait par chaque pays pendant l'année sont présentés et une discussion s'ensuit sur le plan des informations coordonnées provenant des écho-sondages sur le hareng en Mer du Nord. (Recommandation 3, 1953).

Le Dr. W. C. Hodgson est réélu Président.

II. Communications.

Des rapports sur les différents aspects des recherches sur le hareng sont soumis à la réunion par E. Bertelsen, D. H. Cushing, H. Einarsson, Árni Fridriksson, W. C. Hodgson, U. Stefánsson. Le Prof. Dollfus lit un intéressant résumé de ses recherches sur les parasites du hareng.

III. Recommandations.

1. Par suite de la difficulté de réunir les informations nécessaires à l'établissement des Cartes du Hareng, proposé à la réunion de 1952, il est recommandé que le projet soit abandonné.

2. Le Comité du Hareng recommande que les résultats d'écho-sondages sur le hareng qui sont maintenant recueillis dans chaque pays, pendant chaque année, soient soumis au Président du Comité du Hareng, en vue d'une répartition collective qui servira à apprécier l'utilité de cette source d'information dans les recherches sur la biologie du hareng.

3. Il est recommandé que les pays qui sont commercialement intéressés par les pêcheries de hareng du Dogger Bank et de la Manche Orientale développent les expériences de marquages dans ces régions.

Comité du Saumon et de la Truite.

Président: Dr. A. E. J. Went.

I. Compte-rendu.

Le Président souhaite la bienvenue aux membres et aux hôtes et la liste des membres est vérifiée.

Le Dr. A. E. J. Went est réélu Président du Comité.

II. Communications.

Les rapports suivants sur l'avancement des travaux dans les differents pays sont présentés et discutés:—

A. Swain, I. R. H. Allan et W. G. Hartley (Angleterre) et K. H. Balmain et W. M. Shearer (Ecosse): "Les expériences de marquage de truites de mer sur la côte est."

W. M. Shearer: "Essais de marquages à Rockall près de Montrose, Ecosse, de Mai à Août 1954."

I. Bohus Jensen: "Essais de transplantation de truites arc-en-ciel dans les eaux saumâtres."

R. Vibert: "Marquage de jeunes saumons 'smolts' en France."

A. E. J. Went: "Marquage de saumons pris dans filets dérivants irlandais."

Suit une discussion sur l'efficacité des différents types de marques pour "smolts" et la majorité admet qu'il serait désirable de se livrer à des études comparatives, dans des conditions identiques, sur les différentes sortes de marques employées.

III. Visites.

Le Comité a fait une agréable et instructive visite à la "Station d'Hydrobiologie appliquée du Paraclet" sur la Somme, à 130 km. de Paris environ. Les membres du Comité désirent présenter leurs remerciements à leurs collègues français pour la réussite de cette visite, et au "Conseil Supérieur de la Pêche" pour la réception à Amiens à cette occasion.

IV. Programme de Travail.

Le Comité décide de poursuivre le marquage de saumons et de truites de mer sur les bases jetées au cours de réunions antérieures, en particulier pour les "clean fish" en mer et les "smolts". Dans les lieux les plus appropriés des "smolts" seront marqués dans des conditions identiques avec des marques de types divers, afin de faire la comparaison de leur efficacité.

Comité des Mollusques et Crustacés.

Président: Dr. B. Havinga.

I. Compte-rendu.

Le Président souhaite la bienvenue aux membres et aux invités.

Dans la liste des membres, le Dr. H. Vilela remplace le Dr. A. de M. Ramalho et M. J. M. Navaz y Sanz prend la place de M. J. Amengual.

Les membres sont invités à soumettre leurs remarques au Président sur le rapport administratif et les *Annales Biologiques*.

Un plan pour l'excursion vers les centres ostréicoles et mytilicoles de la côte Atlantique est prévu.

Le programme pour 1955 est discuté. Il est évident que les recherches entreprises dans les différents pays sur des sujets identiques sont en progrès.

Le Président souligne l'intérêt qu'il y a à recevoir les programmes pour 1955 dans les plus brefs délais, de façon à pouvoir les coordonner. Il est admis que le Président fera circuler le sommaire des programmes.

Il apparaît que les recherches sur *Nephrops norvegicus* sont effectuées sur une échelle modeste dans plusieurs pays, mais que l'espèce est trop peu importante pour justifier de plus amples recherches. Cependant il est considéré comme particulièrement désirable de centraliser toutes les données sur *Nephrops*. A défaut d'un spécialiste de cette espèce, il est demandé que tous les renseignements sur *Nephrops* soient envoyés au Président.

Contrôle sanitaire. On a reçu des descriptions des méthodes du contrôle sanitaire des coquillages employées dans les divers pays membres. On décide de faire une étude comparative des différentes méthodes employées. Cette étude sera faite en Angleterre, dans les Pays-Bas et autant que possible en France. Les résultats de ces recherches comparatives seront soumises en 1955 à la réunion du Comité des Mollusques et Crustacés.

Le Président attire l'attention sur la progression commerciale croissante de *Sertularia cupressina* et des autres hydraires. Il est décidé que ce sujet, quoique n'ayant pas de rapport avec les coquillages, sera traité par le Comité.

Le Dr. B. Havinga est réélu Président.

II. Communications.

Les rapports suivants sont présentés et discutés:

H. J. Thomas: "Observations sur la répartition sexuelle et les taux de mortalité du homard."

H. J. Thomas: "Observations sur les reprises des homards marqués en Ecosse."

Les deux rapports sont lus par M. McIntyre.

E. Ursin: "Le vanneau (*Chlamys opercularis*) dans les eaux danoises et des îles Féroés."

R. H. Baird: "Rapport préliminaire sur un nouveau type commercial de drague à coquilles St.-Jacques." (Lu par le Dr. H. A. Cole).

H. Vilela: "Etat de maturation sexuelle des huîtres du Tage (*Gryphaea angulata* Lmk.)."

E. Leloup: "Recherches concernant *Nephrops norvegicus* en Belgique."

Un film sur l'industrie huîtrière hollandaise est présenté.

III. Recommandation.

Il est recommandé d'établir un projet de mesures uniformes de protection partout où des stocks de coquillages, hydraires y comprises, sont exploités en commun par plusieurs pays. Un tel projet est particulièrement désirable en ce qui concerne les stocks de homards, langoustines, coquilles St.-Jacques et hydraires.

Comité Hydrographique.

Président: Prof. H. U. Sverdrup.

I. Compte-rendu.

La liste des membres est vérifiée. Un nouveau membre français, le Dr. J. Furnestin est nommé (en son absence M. P. Desbrosses). A la présente réunion la Suède est représentée par le Dr. F. Koczy.

Le rapport administratif pour 1953 est approuvé.

Le rapport de l'Hydrographe sur le travail effectué par le Service Hydrographique du Conseil depuis la dernière réunion est présenté.

A ce propos, le Président souligne l'importance d'adresser aussitôt que possible au Service Hydrographique les données pour le *Bulletin Hydrographique*. Une demande a été envoyée dans ce sens, par les voies officielles, aux pays adhérents. En tout cas les données d'une année devraient être transmises avant la fin de l'année suivante.

L'incorporation au *Bulletin Hydrographique* des données de température recueillies par le bathythermographe est discutée. Un Sous-Comité *ad hoc*, comprenant Messrs. Carruthers, Hermann et Tchernia examine cette question et en rend compte au Comité. Il est décidé de remettre la décision à la prochaine réunion du Conseil. Dans l'intervalle le

Service Hydrographique étudiera les diverses formules de reproduction des données et rassemblera les renseignements sur la question.

L'incorporation au *Bulletin Hydrographique* des mesures optiques effectuées sur l'eau de mer est discutée. Aucune décision n'est prise.

Les programmes préliminaires des travaux hydrographiques dans les divers pays sont exposés.

L'Hydrographe présente un aperçu des observations de routine effectuées sur les trajets déterminés ou aux stations fixes par les bateaux de recherches, les navires de commerce, les bateaux feux, etc.

Lt.-Cdr. LUMBY fait un rapport sur les cartes provisoires des moyennes de température et de salinité de surface en préparation au laboratoire de Lowestoft.

Le Comité propose que ces cartes soient distribuées gratuitement dans la même mesure que les cartes mensuelles synoptiques.

Un Sous-Comité composé de Messrs. LUMBY (Président), DIETRICH et GROEN est institué pour diriger le travail relatif aux cartes définitives de moyennes qui seront préparées par le Service Hydrographique. La Recommandation 1 est adoptée.

Lt.-Cdr. LUMBY propose de reconsidérer la méthode standard internationale de détermination de la salinité et lit "Une note sur l'utilisation d'un agitateur magnétique dans la détermination de la salinité de l'eau de mer par la méthode d'Oxner-Knudsen". Note de J. LONGWELL, du Department of the Government Chemist, Londres.

Pour étudier cette question, un Sous-Comité comprenant Messrs. HERMANN (Président), KALLE, KOCZY, LONGWELL et TCHERNIA est institué, le Service Hydrographique faisant office de secrétariat pour ce Sous-Comité. La Recommandation 2 est adoptée.

Le Président soumet au Comité une lettre de l'Organisation Internationale de l'Aviation Civile qui attire l'attention sur la disponibilité d'un réseau de stations dans l'Atlantique Nord pour la coordination des études océanographiques.

Lt.-Cdr. LUMBY, Président du Comité des navires météorologiques à l'Association Internationale d'Océanographie Physique, expose le travail effectué à bord de ces navires. Il est projeté d'établir un programme international qui commencera avec l'Année Internationale Géophysique (1957—58). Ce programme serait cependant limité aux mesures du bathythermographe.

Le Président informe le Comité que l'Association Internationale d'Oceanographie Physique a contacté le Conseil en proposant d'intensifier le travail sur la circulation océanique durant l'Année Internationale Géophysique.

Un Sous-Comité, composé de Messrs. BÖHNECKE (Président), EGGVIN, GOUGENHEIM, et LUMBY est créé pour examiner cette question et l'exposer à la prochaine réunion du Conseil.

Le Dr. KOCZY pose la question d'une modification des profondeurs standards auxquelles le Conseil recommande de faire les observations. La recommandation d'Octobre 1948 est corrigée comme il est indiqué dans la Recommandation 3.

Le Professeur SVERDRUP est réélu Président.

II. Communications.

Les communications suivantes sont faites:—

G. DIETRICH: "Processus de mélange des eaux du Sud de la Mer du Nord."

Lt.-Cdr. LUMBY et le Président prennent part à la discussion.

J. EGGVIN: "Physionomie de la circulation en Mer de Norvège."

Messrs. LUMBY, TAIT, DEVOLD, CARRUTHERS, et le Président prennent part à la discussion.

R. JOHNSTON: "Composés biologiquement actifs dans la mer." (présentée par le Dr. TAIT). Le Dr. CARRUTHERS prend part à la discussion.

F. HERMANN: "Températures du fond de la mer déduites des mesures de résistance des cables télégraphiques." Le Dr. TAIT prend part à la discussion.

III. Recommandations.

1. Il est recommandé de créer un Sous-Comité de trois personnes pour l'étude du matériel disponible en vue de la préparation des cartes définitives de moyennes de températures et de salinités de surface dans le secteur couvert par les cartes mensuelles et pour étudier les méthodes de préparation de ces cartes.

Il est aussi recommandé que des dispositions soient prises pour que ce Sous-Comité se réunisse, si nécessaire, avant la prochaine assemblée du Conseil, afin qu'il puisse rendre compte de ses travaux à l'assemblée.

2. Il est recommandé de créer un Sous-Comité de cinq personnes pour la révision de la méthode standard actuelle de détermination de la salinité par la méthode Oxner-Knudsen décrite par HELGE THOMSEN dans le *Bulletin Océanographique* de Monaco.

Il est aussi recommandé que des dispositions soient prises pour que ce Sous-Comité se réunisse, si nécessaire, avant la prochaine assemblée du Conseil, afin qu'il puisse rendre compte de ses travaux à l'assemblée.

3. Il est recommandé que le paragraphe d de la résolution d'Octobre 1948, traitant des observations à faire aux profondeurs standards soit modifié de la façon suivante:

(d) Que pour la Baltique et le partie du Secteur de Transition située au sud de la latitude de Skagen, jusqu'a la profondeur de 100 mètres, les observations soient faites aux profondeurs standards suivantes: 0, 5, 10, 15, 20, 30, 40, 60, 70, 80, 100 mètres.

Comité du Plancton.

Président: Prof. T. Braarud.

I. Compte-rendu.

Les rapports concernant les travaux effectués en 1953 sont adoptés. On étudie l'avancement de la publication des *Fiches d'Identification du Zooplancton* en s'appuyant sur un rapport du Dr. G. Thorson. Il est décidé d'établir pour l'année prochaine une discussion plus étendue sur les mesures qu'il est possible d'établir pour l'obtention de nouveaux manuscrits en plus grand nombre et pour les imprimer rapidement. Le Comité témoigne son appréciation sur le travail personnel fourni par l'éditeur qui a préparé cette année les nouvelles fiches.

Un plan pour obtenir des travaux sur un sujet particulier présenté à la prochaine réunion du Comité est discuté, dans le but de permettre à des spécialistes d'assister à la réunion à laquelle ils ne pourraient pas être présents autrement.

Le Comité propose que le Dr. G. Thorson et M. F. S. Russell soient nommés à nouveau Editeur et Co-éditeur des *Fiches d'Identification du Zooplancton* pour l'année à venir.

Le Professeur T. Braarud est réélu Président.

II. Communications.

Les travaux suivants sont lus:—

J. H. Fraser: "Le plancton des eaux côtières des îles Britanniques en 1953."

Kr. Fr. Wiborg: "Plancton et hydrologie de la Mer de Norvège."

L. Devèze: "Aperçu sommaire de la microbiologie du Golfe de Marseille."

L. Devèze: "La diminution du matériel organique représentée par le zooplancton par l'action bactérienne."

T. Braarud: "Rapport sur l'avancement des études des coccolithophoridés au microscope électronique, au Laboratoire de Biologie d'Oslo."

Comité Statistique.

Président par intérim: Dr. A. E. J. Went.

I. Compte-rendu.

En l'absence du Président élu à Copenhague en 1953, le Dr. A. E. J. Went prend temporairement la présidence.

Les *Bulletins Statistiques* pour 1951 et 1952, publiés respectivement en Février et Septembre 1954 sont présentés au Comité. Le Dr. E. M. Poulsen mentionne quelques différences entre le matériel recueilli par l'I.C.E.S. et celui recueilli par l'I.C.N.A.F. Le Dr. Poulsen offre d'étudier ces différences avec le Secrétaire Général à Copenhague; cette proposition est acceptée par le Comité qui le remercie.

Les retards apportés aux publications des statistiques et les moyens d'y remédier sont discutés. Il est décidément adopté, quoiqu'il en soit, que si les chiffres définitifs de l'année précedente ne peuvent être donnés pour le mois de Septembre suivant, il est préférable de les attendre, plutôt que de publier des chiffres provisoires qui demanderont de grandes corrections par la suite.

Le Comité étudie le mémorandum préparé par le Secrétaire Général dont les recommandations sont approuvées et l'autorise à contacter les représentants des divers pays pour l'effort à faire au sujet des statistiques, même si elles se rapportent seulement à un nombre limité d'espèces, de secteurs ou de modes de pêche.

Le Dr. Aa. J. C. Jensen propose que des méthodes uniformes de présentation des statistiques concernant le poisson capturé en vue de sa transformation soient adoptées pour tout le Bulletin. Il soulève aussi la question de la distinction des prises faites à la limite des différents secteurs. Le Dr. Jensen donne des exemples d'espèces inconnues ou rares en Baltique, qui ont été incluses dans les statistiques de ce secteur. Il est adopté que ces deux sujets seront étudiés ultérieurement par le Secrétaire Général, en liaison avec le Dr. Jensen.

Une discussion a lieu sur l'opportunité d'avoir les documents concernant le rassemblement, la compilation et l'emploi des statistiques; il est convenu de demander au Comité Consultatif de fixer une période à ce sujet aux prochaines réunions du Conseil.

Le Président suppléant propose que le Dr. J. Lundbeck (Allemagne) soit nommé pour l'année suivante. Le Dr. Lundbeck est élu à l'unanimité.

II. Recommandation.

Il est décidé que le Bureau demande au Ministère des Affaires Etrangères du Danemark d'entrer en relation avec les Gouvernements faisant partie du Conseil et suggère que les statistiques demandées par le Conseil soient fournies pour le premier Septembre qui suit l'année a laquelle elles se rapportent.

2ÈME PARTIE

RAPPORT ADMINISTRATIF

REPORT

of

ADMINISTRATION FOR THE YEAR ENDING OCTOBER 31st 1954

I. General.

Composition of the International Council.

Delegates.

Belgium have appointed Professor CH. GILIS as a Delegate to the 42nd Council Meeting.

Finland have appointed Professor E. HALME, Directeur de l'Institut Scientifique des Pêches, Helsingfors, with Dr. SVEN SEGERSTRÅLE as his personal substitute.

France have appointed as a Senior Delegate M. le Dr. LE GORGEU, Vice-Président du Conseil d'Administration de l'Institut Scientifique et Technique des Pêches Maritimes with M. A. ALLOY, Directeur des Pêches Maritimes, as suppleant, and M. le Dr. JEAN FURNESTIN, Directeur de l'Institut Scientifique et Technique des Pêches Maritimes.

Iceland. Mr. ÁRNI FRIÐRIKSSON, who has been a Delegate since Iceland adhered to the International Council in 1938, retired in 1953, when he was appointed General Secretary. Mr. JÓN JÓNSSON, Director of the Department of Fisheries, The University, Research Institute, Reykjavik, has been appointed a Delegate in his place.

United Kingdom have appointed Dr. C. E. LUCAS, Director of the Marine Laboratory in Aberdeen, as a British Delegate. According to an amendment of the Rules (see Pt. I, p. 15, Agenda, Point 14) Mr. A. T. A. DOBSON ceased to be a British Delegate, on election as President, and was replaced by Mr. R. G. R. WALL, Secretary to the Ministry of Agriculture and Fisheries, England.

Composition of the Bureau.

The First Vice-President, Professor J. LE GALL, died in February 1954. This much regretted loss caused a change in the composition of the Bureau which now consists of the following members, elected for 1954/55: Mr. A. T. A. DOBSON, President, Dr. H. U. SVERDRUP, First Vice-President, Dr. J. FURNESTIN, Dr. E. LELOUP and Dr. Å. V. TÅNING, Vice-Presidents.

Committees.

After the decease of Professor LE GALL the President asked Dr. J. FURNESTIN to act as Chairman of the Atlantic Committee until the 42nd Statutory Meeting of the Council at which occasion he was elected Chairman.

Dr. W. C. HODGSON, England, has replaced Mr. ÁRNI FRIÐRIKSSON as Chairman of the Herring Committee and Dr. J. LUNDBECK, Germany, has replaced Dr. ROSÉN, Sweden, as Chairman of the Statistical Committee. Dr. ROSÉN has been Chairman of this committee since 1948 and since 1946 Editor of the *Bulletin Statistique*.

At the 42nd Statutory Meeting in Paris, October 1954, the Council's committee-system was rearranged according to a scheme drafted by the Chairman of the Consultative Committee, Mr. R. S. WIMPENNY. (See this Volume, Part I, pp. 26—28).

Meetings.

The President had a meeting with the General Secretary on 20. and 22. March 1954, in Copenhagen in order to prepare the forthcoming Bureau Meeting in May.

A meeting of the Bureau took place in Copenhagen on 2. and 3. May 1954, and was attended by all members and the Chairman of the Consultative Committee. M. P. Desbrosses attended as observer, in place of Professor Le Gall.

A meeting to "prepare for publication a statement on the present state of knowledge on echo-sounding as applied to commercial fishing" was held at the Central Office from 15. to 20. March, 1954; the meeting was attended by: Dr. W. C. Hodgson, England, Chairman, Mr. Finn Devold, Norway, Dr. A. von Brandt, Germany, Dr. F. Koczy, Sweden, Mr. F. Hermann, Denmark, Mr. B. B. Parrish, Scotland, Reporter, and the General Secretary, ICES.

Meetings of the Liaison Committee were held on 3. to 7. May in connexion with the meeting of the Permanent Commission, which took place in Copenhagen from 4. to 7. May 1954.

II. The Central Office in Copenhagen.

General Secretary.

The previous General Secretary, Mr. V. Dessau, retired on 31. December 1953, and was succeeded by Mr. Árni Friðriksson, who took over the duties as full-time General Secretary as from 1. January 1954.

At their meeting in May the Bureau asked the General Secretary to act as Editor of the *Bulletin Statistique* (for 1953 and onwards) and of the *Annales Biologiques* (for 1953 and onwards).

Staff.

Miss M. Rehder, Dr. rer. pol., who has worked for the Council since 21. July 1926, kindly agreed to continue on full-time terms until 31. October and on half-time terms from 1. November to 31. December 1954. At the Bureau Meeting in May the President thanked her, on behalf of the Council, for her long and devoted service and presented her with a parting gift.

The Bureau appointed Mrs. H. Harder as Miss Rehder's successor and agreed to Miss Hedegaard acting as a book-keeper instead of the General Secretary. The salaries of both ladies were adjusted according to their new duties.

The Bureau agreed to appoint Miss M. Hänschell as Assistant from 1. May 1954.

Publications.

	Issued	In preparation
Rapp. et Proc.-Verb., Vols. No.	135, 136	137
Annales Biologiques, Vol.	IX	X
Journal du Conseil, Vol.	XIX, 2, 3; XX, 1	XX, 2
Zooplankton Sheets	—	No. 50 a.f.
Bulletin Statistique, Vols. No.	XXXVI (1951) XXXVII (1952)	XXXVIII (1953)
Bull. Hydrographique	for 1949, for 1950	for 1951
Synoptic Hydrographic Charts	July 1953— June 1954	July 1954

Income and Expenditure Account for the financial year $^{1}/_{11}$ 1953—$^{31}/_{10}$ 1954.

EXPENDITURE

I. Incidentals	D. kr.	D. kr.
President	1.000,00	
Chairmen of Commitees and Sub-Committees	24.743,04	25.743,04
II. Headquarter Staff		
General Secretary	16.000,00	
Administrative Department		
Assistant Secretary	10.638,64	
Part Time Assistance	2.224,00	
Publication Department		
Assistant Secretary	14.618,70	
Assistant, Mrs. H. HARDER	9.344,11	
Assistance, divers	6.914,90	
Statistical Department		
Assistant Secretary	11.847,09	
Hydrographical Department		
Hydrographer	19.356,43	
Assistant, Mrs. P. HOLM	10.638,64	
Assistance	6.108,97	
Part Time Assistance	7.380,87	115.072,35
III. Office Expenses		
Rent	5.580,00	
Light and Heating	1.000,00	
Stationary	5.205,91	
Postage, Telephone and Telegrams	3.092,83	
Furniture and Fittings	1.532,00	
Insurance	1.076,95	
Upkeep	3.614,45	
Miscellaneous	7.102,24	28.204,38
IV. Travelling Expenses		13.760,45
V. Publications		
Printing	80.700,77	
Less Payments from Woods Hole	1.816,45	
	78.884,32	
Translation	721,15	
Distribution	1.132,80	
Editor of Journal du Conseil	4.490,07	
Assistance to Editor, Journ. du Cons.	1.500,00	
Editor of Bulletin Statistique	2.000,00	
Editor of Plankton Sheets	1.000,00	89.728,34
VI. Pensions		
Miss HANSTED	6.870,48	
Miss BRØNNICHE[1]	9.804,00	
Contributions, Mrs. HARDER and Mrs. HOLM	1.398,79	
Premium, Pensioninsurance	5.377,72	23.450,99
Excess of Income over Expenditure, kr. 40.683,85,		
Transferred to Capital Reserve Fund	20.341,93	
Transferred to Pension Fund	20.341,92	40.683,85
Kr.		336.643,40

RECEIPTS

I. Contributions	D. kr.	D. kr.
Belgium	20.000,00	
Denmark	20.000,00	
Finland	10.000,00	
France	40.000,00	
German Federal Republic	40.000,00	
Iceland	20.000,00	
Ireland	15.000,00	
Netherlands	20.000,00	
Norway	20.000,00	
Portugal	15.000,00	
Spain	20.000,00	
Sweden	20.000,00	
United Kingdom	40.000,00	300.000,00
II. Interest		
Bank Account	2.848,23	
Bonds	4.464,00	
Pension Fund	4.873,50	12.185,73
III. Sale of Publications		24.457,67
Kr.		336,643,40

[1]) The difference between the amount of pensions and the amount of interest yielded by the Pension Fund has been paid as a subvention for the financial year 1953—54.

Balance Sheet October 31th. 1954.

LIABILITIES

	D. kr.	D. kr.
Creditors		
Contributions 1954/55	211.667,00	
Sale of Publications, prepaid	7.500,00	
Office Expenses	750,00	219.917,00
Exchange Fluctuation Fund		
Solde as per 1/11 1953	9.845,23	
Less part of difference in exchange per 31/10 1954	9.845,23	0,00
Capital Reserve		
Solde as per 1/11 1953	46.476,06	
+ Excess of Income over Expenditure, part	20.341,93	
	66.817,99	
Less part of difference in exchange as per 31/10 1954 more than Fluctuation Fund	4.168,27	62.649,72
Pension Fund		
Solde as per 1/11 1953	86.222,24	
+ Excess of Income over Expenditure, part	20.341,92	106.564,16
		389.130,88

ASSETS

	D. kr.	D. kr.
Cash in hand	980,37	
Cash at Post office	23,03	
Cash at Sparekassen for Kjøbenhavn og Omegn	225.207,99	226.211,39
Bonds		
$4^1/_2$ % Danish State Bonds redeemable in 1997, nominal value kr. 208.600,00 at cost kr. 172.048,00. Market value 31th October 1954, $77^3/_4$ %		162.186,50
Debtors, Offprints		732,99
		389,130,88

(sign.) Á. Friðriksson,
General Sécretary

Else Hedegaard

I have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that it is in accordance therewith. I have verified the existence of the cash in hand and at bankers as well as of the treasury Bonds.

Copenhagen, December 3rd 1954.

(sign.) Karl Sørensen,
Statsautoriseret Revisor
(State-authorized Accountant)

We have scrutinized the foregoing Accounts and Balance Sheet and are satisfied that they are correct.

(sign.) A. T. A. Dobson — G. Rollefsen
J. Furnestin — J. Claussen
Å. V. Tåning — A. E. J. Went
B. Dinesen

REPORTS

of

AREA AND OTHER COMMITTEES

Northern Seas Committee.

North-Eastern Area Sub-Committee.

1953

By Gunnar Rollefsen

The following countries: England, Germany, Norway and Scotland, have carried out investigations in the North-Eastern Area during the year. Denmark, Eire, Finland, France and Holland report that no activity has taken place on their parts.

England

(G. C. Trout).

Cruises of the "Ernest Holt".

Six cruises to the Barents Sea were spent studying planktonic productivity following the recession of the ice-edge along the Bear Island/Hope Island Bank. In addition to the collection of hydrographic and plankton samples along a series of sections, trawling for cod took place both along the sections and at other critical positions. Echo-sounder surveys were used to delimit extensive traces, attributed to capelin shoals, which were found at varying depths, in order to determine the timing of the cod/capelin association upon which cod fisheries have developed in previous years. No important concentrations of cod were found, in the area surveyed, however, either by research vessel fishing or by commercial trawlers. (Investigation of factors influencing the movement of shoals south of Bear Island, and likely to affect their direction of migration, will form the main work of the "Ernest Holt" in 1954.)

Routine hydrographic and plankton observations on the West Bear Island Hydrographic Section were continued during March, late May, September and late November, whilst a bottom temperature survey of the Barents Sea was begun during the seventh cruise in November and covered the area from the southern edge of the Central Bank to Novaya Zemleya along latitude 74°35′ N. southwards to Cape Kanin and the Skolpen Bank.

Age analysis by means of otoliths and fin rays was continued at a reduced level throughout the year from "Ernest Holt" samples.

Market Sampling.

Market sampling of Barents Sea cod was continued at Grimsby for length and age, whilst complementary sampling was begun at Hull in November.

Germany

(Joh. Lundbeck).

Biologische Anstalt Helgoland, Bremerhaven, Unter-Abteilung Fischerei Biologie.

Work at Sea. Cruise for the purpose of investigating the stocks of saithe off the Norwegian coast with trawler "Nürnberg" from 12. to 29. November 1953 to Malangen. Dr. U. Schmidt and S. Bick were aboard. Purpose of the cruise:—

1) Investigations on the age- and length-groups of the saithe stocks off the Norwegian coast.
2) Investigations on the relations between age, length, maturity and migrations.
3) Conditions of growth.
4) Distribution during the various times of the day and in the various depths.

Research material: 5,395 length measurements,
4,100 maturity determinations,
1,295 age determinations.

The material is worked up and a publication on the "Stock of Saithe off the Norwegian Coast" is being prepared.

Market Investigations.

Species	Length measurements		Age determinations	
	Number	kg.	Number	kg.
Cod	4,858	17,064	293	900
Saithe	4,009	14,480	4,009	14,480
Haddock	4,835	8,700	320	540
Redfish	4,286	4,600	1,443	1,600

Rare Fishes. *Brama rayi* Bloch: 2 specimens of 55 and 57 cm. in length, caught off the Lofoten in January 1953.

Bundesforschungsanstalt für Fischerei, Institut für Seefischerei, Hamburg.

Market Investigations.

Length measurements:—

	Norwegian Coast	Bear Island	Barents Sea	Total
Cod	6,351	690	1,333	8,374
Haddock	7,659	437	1,457	9,553
Redfish	234	766	226	1,226
Total	14,244	1,893	3,016	19,153
Age determinations (otoliths):—				
Cod	1,272	335	1,017	2,624
Haddock	1,595	—	956	2,551
Total	2,867	335	1,973	5,175

Norway

(G. Rollefsen).

Hydrography and Plankton.

See reports to relevant Committees.

Biology.

Cod. In February, March, and April a cruise was made to the northern waters with the "G. O. Sars". Due to very unfavourable weather only a small part of the planned work in the Barents Sea proper could be carried out. In August to October a $2^1/_2$ months cruise was made with the "G. O. Sars' to the Barents Sea and Svalbard waters. The work included hydrography, zoo- and phytoplankton, nutrient salts, asdic and echo surveys, fish tagging and collection of material for biological statistics of cod, haddock and catfish.

The sampling of stocks from the seasonal cod fisheries has been continued. In Lofoten 23,746 cod were measured and otoliths of another 6,475 sampled. During the spring cod fishery in Finnmark 52,474 cod were measured and the age of 3,888 determined.

The tagging experiments on cod have been continued. 1,113 fish (caught by purse-seine) were released on the Lofoten banks. 697 fish (caught by trawl) were released from the "G.O. Sars" at different localities in the Barents Sea and in the Svalbard waters.

Haddock. Otoliths of 8,127 fish were sampled in Northern Norway and in the Barents Sea.

The tagging experiments on haddock were continued. 397 fish (caught by long-lines) were tagged off the Finnmarken coast in August—September. 59 fish were released from the "G. O. Sars".

Catfish (*Anarrhichas minor*). Vertebrae and scales of 600 fish were sampled for an investigation of the age and growth of this species. 120 fish were tagged off the Finnmarken coast and in the Barents Sea. Lea tubes fastened with nylon in the neck were used.

Herring. See the Herring Sub-Committee.

Other Investigations.

On a $1^1/_2$ months cruise with the R/V "Asterias" of Tromsø Museum investigations of the "baby"-groups of cod, haddock, redfish and saithe were carried out as in previous years.

Scotland

(B. B. Parrish).

Scottish research vessels made hydrographical and plankton observations in the southern part of the area (south of latitude 61° N.) in April and August. These observations were made during the course of cruises to study the dispersal of haddock eggs and larvae from the spawning grounds. Results of the surveys are contained in the North Sea Section of the *Annales Biologiques*.

North-Western Area Sub-Committee.

1953

By Å. Vedel Tåning

Work was carried out by the following research vessels:—

Denmark: M/S "Dana", M/C "Adolf Jensen" and M/C "Jens Væver".

Iceland: M/S "María Júlía".

Norway: M/S "G. O. Sars".

Scotland: S/S "Scotia".

Sweden: M/S "Skagerak".

Fishery inspection vessels, liners and fishing vessels collected, as usual, hydrographic and biological data, *inter alia* the fishery inspection vessel "Thetis" (Denmark), the fishing vessel "Capitão Vilarinho" (Portugal), and the trawler "Passau" (Germany). Motor cutters were used in Faroe waters.

The reports on biological and hydrographic observations are published in *Annales Biologiques*, *Bulletin Hydrographique*, and relevant national publications.

The reports from the special committees on hydrography, herring, plankton etc. include information on these items.

Belgium

(E. Leloup).

No research work in this area was carried out at sea during 1953.

Denmark

Faroes and Northern Waters (Å. Vedel Tåning).

The hydrographic-biological section over the Faroe-Shetland Channel was worked by the "Dana" on 30. May to 1. June.

During June the herring programme of the area north and north-east of the Faroes was carried out in collaboration with the Icelandic research vessel "María Júlía" and the Norwegian research vessel "G. O. Sars". Similar sections to those worked during the previous years were carried out. The Danish fishery inspection vessel "Thetis" assisted in this work by cruises on which asdic was operated in May, August and September. Information on the distribution of herring in the area was given to the commercial Faroe herring fishing fleet; the drifters had a year of great success.

During December and January 1954 a fishing cutter from the Skaw was chartered for experimental herring fishing in the area north and east of the Faroes with the Larsen floating trawl. Hydrographic and other operations were carried out during this cruise.

The fish larvae survey was carried out by the "Dana" in the Faroe area proper in June. 2-metre stramin nets were used as usual.

During the cruise of the "Dana" hydrographic and plankton stations (sampling of phytoplankton and zooplankton) were worked in the Faroe area. Also some trawling stations were performed.

Samples for age assessment of the stock of cod in Faroe waters were collected during the spring and in the autumn, especially from commercial catches. A total of 1,700 otoliths and 4,240 measurements were obtained by the fisheries laboratory in Thorshavn. Some cod (250) were marked and liberated south of Bordø and west of Vågø, and also some data of other commercial fishes (tusk and ling) were collected.

A cod egg survey was carried out in the spring, March—April (57 Hensen-net samples). Chartered motor cutters carried out the work which comprised marking experiments and the cod egg survey.

The routine hydrographic and biological section from the Faroes to East Greenland (along 62° N. Lat.) was worked during late June and the first days of July.

During July and August the "Dana" carried out research work in the Davis Strait; the most southerly section was worked between Cape Farewell and Hamilton Inlet, the most northerly section north of Disko Island (see below).

West Greenland Waters (Paul M. Hansen).

Offshore Work:

The "Dana" operated in the West Greenland area from 3. July to 11. August. The work covered the area from the section Cape Farewell—Hamilton Inlet north to Disko Island.

Hydrographic Observations were made chiefly at 40 stations on the six routine sections over the fishing banks in Davis Strait; temperature measurements with the bathythermograph were recorded at 39 stations.

Plankton. Pelagic hauls with the 2-m. stramin-net were made at 38 stations; vertical hauls with the Hensen-net were carried out at 21 stations.

Cod. About 2,500 cod otoliths for age determination and growth studies were collected at 12 different localities on the offshore banks. They were caught from the "Dana" and the M/C "Adolf Jensen" by hand-lines and long-lines.

A total of 1,539 cod were tagged on the offshore banks. Analyses of stomach content and studies upon liver weights were carried out.

Coastal Waters and Fjords:

The "Adolf Jensen" started work in June and carried out work in the area between 60°00′ to 71°00′ N. Lat. In Julianehåb district the M/C "Immanuel" has been operating since June. Both cutters continued their work during the winter season.

A field laboratory has been established at Godthåb.

Hydrographic Observations were made at several stations in coastal waters and in the fjords. In Godthåb and Julianehåb districts observations were regularly made at fixed stations during the whole season.

Cod. Pelagic hauls with stramin-nets were made for zooplankton throughout the whole season at various stations in the fjords and in the coastal area as well as on the banks. In Godthåb and Julianehåb districts they were regularly taken throughout the season on fixed stations together with Hensen-net hauls. Fishing experiments with hand-seine for small cod were carried out at different localities along the coast. About 5,500 samples of cod otoliths were collected partly by "Adolf Jensen" and partly at the different fisheries stations along the coast. 941 cod were tagged by "Adolf Jensen" in inshore waters.

Herring. Fishing experiments with nets and seine were carried out in Sukkertoppen and Julianehåb districts. Samples of otoliths and scales together with measurements were obtained. 143 herrings were tagged in Sukkertoppen district in June.

Salmon and Char. Samples of scales of salmon and otoliths of char were collected and tagging experiments continued.

Greenland Halibut. Fishing experiments with long-lines were carried out especially in Godthåb Fjord. Studies upon the length distributions in the catches and relation between total length and weight have been made.

Deep-Sea Prawns (*Pandalus borealis*). Trawling experiments were carried out on several stations in the coastal area and in the fjords. Material for biological studies were collected during the whole calendar year in Godthåb and Julianehåb districts. New prawn beds were found and mapped out.

England

(R. S. Wimpenny).

Plankton sampling has continued from the Ocean Weather Ships at station "I". The position of the station was changed on 29. August 1953, from 59° N., 19° W. to 61° N., 15°20′ W. 31 vertical hauls for zooplankton were made from 100 metres to the surface, at about weekly intervals.

Eire

(A. E. J. Went).

No research work in this area was carried out at sea during 1953.

France

(J. Ancellin).

The frigate "Aventure" of the French Navy worked 135 hydrographic stations during the summer over the Newfoundland fishing banks and between Newfoundland and Greenland; observations were made to a depth of 500 metres.

Germany

(Adolf Kotthaus).

Work at Sea. Owing to the fact that Germany has not yet a research vessel at its disposal for long distance voyages, again in 1953 only limited investigations could be carried out at sea on board trawlers. From 22. September to 15. October Dr. U. Schmidt (Biologische Anstalt Helgoland, Department Fishery Biology, Bremerhaven) took part in a fishing trip with the trawler "Passau" to Iceland in order to obtain age compositions, length distributions, growth rates, sex distributions and maturities, etc., of the coalfish stock.

The voyage suffered much from bad weather so that only 586 fish could be investigated, and as a trawler must often change its fishing ground these were obtained from very different grounds (NW., SW., SE. coasts and the Rose-Garden).

Market Investigations. Fish of various species were measured and otoliths were taken from landings of trawlers coming from Iceland, Greenland, and Newfoundland waters. Particulars are given in the following table:—

	Cod	Haddock	Coalfish	Redfish	Catfish
Iceland:					
Measurements ..	5,172	1,744	16,939	6,662	669
Otoliths.....	3,704	1,532	16,939	1,113	—
Greenland:					
Measurements ..	1,378	—	—	442	—
Otoliths.....	1,378	—	—	—	—
Newfoundland:					
Measurements and Otoliths....	287	276	203	82	("Rosefish")

Work on different Species.

Cod and Haddock. Length measurements and age determinations using otoliths were continued (see table above).

Coalfish. The investigations on the coalfish were continued this year in order to get a survey of the age and growth conditions of the stock in Icelandic waters, combining investigations at sea with those on the fish market. Great value was especially attached to the first "spawning zone", which is of great importance in forecasting the age composition of the stock the following year. The spawning migration of the coalfish and its migration back to the feeding grounds seem to be much more complicated than supposed at the beginning.

Redfish. As in former years length measurements and age determinations were carried out, amounting to a total of 4,972 and 1,113 respectively. This material originated from different fishing grounds round Iceland and in the Rose-Garden. In addition 82 otoliths were taken from "rosefishes" landed from Newfoundland waters, and their age was determined. Race investigations have been continued by testing several characters for their usefulness for separating the different populations in the North Atlantic (number of vertebrae, fin rays, gill rakers, form of the operculum and the dentale etc.).—"Rosefishes" and European redfish and their otoliths were exchanged with the Woods Hole Oceanographic Institution (U.S.A.) in order to see whether these two forms are identical or not, and to find a uniform manner for age determination.

The reproductive organs of redfish were studied in relation to their anatomy and histology.

Other Species. Investigations were carried out on different species of **catfish** with regard to the anatomy and histology of the periodic renewal of the teeth, the food, growth, number of eggs, and variations in the fat content. Similar observations, especially on the cyclic renewal of the teeth, were made on **witch** and **lemon sole.**

Other Work. The investigations on the new German trawl fishery in Greenland waters, started in 1952, were continued. A relevant paper was published by A. Meyer.

Literature.

Kotthaus, Adolf: "Der Holotypus von *Hoplostethus islandicus* Kotthaus." Zool. Anz., **150**, 3/4, 1953, pp. 81—83.
— "Drei seltene Haifische vom Rosengarten." Die Fischwirtschaft, 8, 1953, pp. 196—197.
Meyer, Arno: "Die neue deutsche Grönland-Schleppnetzfischerei 1952—53". — Mitt. Inst. Seefischerei, 5, 1953, pp. 1—46.

Iceland

(Árni Friðriksson).

Work at Sea. Nine cruises were made during the year with the research vessel "María Júlía". During the first one, which took place from 28. April to 16. May trawling experiments were carried out all

around Iceland. Plankton was sampled at 70 stations and many hydrographic observations were made. In June a hydrographical cruise was made in the area north of Iceland, a section extending from Langanes to Jan Mayen was worked and a detailed survey was made in the area south of Jan Mayen and east and south-east of Iceland. This cruise was made in co-operation with the R/V "Dana" and the R/V "G. O. Sars". During the year two series of investigations were initiated, the one in Faxa Bay, the other off the north coast. In Faxa Bay three cruises were made in May, August and November and it is intended in the future that quarterly investigations shall be carried out in the Bay. The principal aim was to study the density of the most important fish stocks, but plankton and bottom samples were also taken and hydrographical observations were made. The other series of trips were made on the north Icelandic herring grounds for the purpose of following the seasonal changes in the chemical and hydrographical conditions of the area. Four cruises were made in September, October, November and December and it is hoped that monthly observations can be carried out.

Hydrography. A great number of samples were collected on the various cruises and worked up in the laboratory as usual. In Siglufjord, on the north coast, a hydrographical laboratory was opened in September to be run in connexion with the above-mentioned monthly cruises off the north coast. It is intended to investigate changes in temperature, salinity, oxygen and nutrient salts. As in previous years thermographical recordings were made by commercial steamers on coastal as well as on trans-atlantic routes.

Plankton. Many samples were taken and are being worked up.

Cod. During the year 39,480 fish were measured and 17,725 age determinations were made by means of otoliths. The material was collected as follows: Westman Islands 8,918 (3,361 otoliths), Keflavik 7,919 (3,233), Akranes 4,106 (1,599), Húsavik 7,256 (422), commercial trawlers 9,675 (7,504), the research vessel 1,606 (1,606).

In W.Greenland waters 22,874 cod were measured and 10,023 otoliths were collected onboard commercial trawlers.

Tagging. The following number of demersal fish were tagged:—

Species	April-May	May	August	November	Total
Cod	2,222	3	50	503	2,778
Haddock	—	—	—	376	376
Plaice.....	264	445	978	360	2,047
Lemon sole...	—	174	203	48	425
Catfish	—	9	—	—	9
Total	2,486	631	1,231	1,287	5,635

Herring. See the report of the Herring Sub-Committee.

Other Items. Big-scale experiments in Faxa Bay were inaugurated. Four cruises will be carried out annually the aim of which is: a) marking of haddock, plaice, lemon sole, cod, and other species as opportunity allows, b) stock analysis of the most important food fishes, c) density of fish, d) density of bottom animals and e) growth rate of fish in connexion with c) and d). Three cruises were made during the year in May, August and November.

Netherlands.

(B. Havinga).

No work carried out at sea in the area.

Norway

(Birger Rasmussen).

Cod. In 1953 fishery investigations were carried out in Greenland waters by Birger Rasmussen. During a cruise onboard a commercial vessel a special study was made of the temperatures and fishing conditions in the Holsteinsborg Deep off West Greenland. In addition 2 hydrographic sections were operated with the bathythermograph across Lille Hellefiske Bank and one section across Fylla Bank. About 500 cod were tagged in the area. Also, a study of the conversion factors to be used for calculating the weight of fresh round fish from salted condition were carried out. A special report of the investigations will appear in the *Annales Biologiques* for 1953.

Hydrography, Plankton and **Herring.** See the reports to the relevant committees.

Portugal

(A. M. Ramalho).

4,206 cod were measured and 1,097 otoliths collected by M. J. M. Figueiredo on board the fishing vessel "Capitão Vilarinho", during the months of June and July, on the following West Greenland banks:—Dana, Fiskenæs, Fylla and Store Hellefiske Bank.

Scotland

(B. B. Rae).

During 1953 seven cruises were carried out by the Scottish research vessel "Scotia", in the North-Western Area. The dates of these cruises were as follows:—

1. 6.—23. February
2. 3.—20. March
3. 1.—22. April
4. 7.—29. May
5. 9. June—2. July
6. 12. August—5. September
7. 5.—28. November

Faroese grounds were visited on each occasion and in June the programme also included a rapid survey of south and south-west Icelandic grounds. The return from Iceland was made by way of Lousy and Rockall Banks.

Bad weather interrupted scientific work at the beginning and at the end of the year but extensive

hydrographical and plankton observations were made throughout the period covered. In the Faroe—Shetland Channel the hydrographical line of stations from the Butt of Lewis to Faroe across the Wyville Thomson Ridge was worked on cruises 1, 4, 5, 6 and 7 while the section from Faroe to North Shetland was completed on numbers 1, 4 and 6. The line of stations northwards from Enniberg in Faroe was successfully worked in May.

In addition to the collection of water samples for the estimation of salinity on all cruises, samples were collected for oxygen and phosphate analyses on cruises 1, 4, 5 and 7. Drift-bottles were liberated on each cruise except the second and drift envelopes were liberated in June and August.

Plankton collections were made on each trip and special surveys for haddock eggs and larvae were carried out round the Faroes in each month from February to June inclusive.

Trawling at Faroes was more restricted than in recent years but all catches were dealt with according to standard practice and the usual collections of scales, otoliths, measurements etc. were made for a study of the more important species of fish.

Sampling of commercial catches from Faroe on Aberdeen fish market included measurements of haddock and chicken halibut and the collection of scales of the former. Market observations also included an examination of numerous adolescent or adult halibut from Faroe, Iceland and Greenland, for the presence of the larvae of the cestode *Grillotia erinaceus*. In the course of this latter work some interesting observations were also recorded on the size and maturity of halibut.

The results of these investigations will be dealt with under their appropriate headings in *Annales Biologiques* for 1953 or in other publications.

Sweden

(A. Molander).

Experimental fishing and biological research work on ling *(Molva)* were carried out during May 1953 west of Shetland and along the south and south-west coast of Iceland.

North Sea Sub-Committee.

1953

By C. E. Lucas

Research work in the North Sea continues to develop, there being few parts from which observations are not now being obtained with some regularity. A review of the relevant *Annales Biologiques* shows not only how the work has intensified since the war, but that in a number of instances the work undertaken by different countries is now forming part of more or less integrated schemes covering large parts of the area.

This is a feature which the Sub-Committee must view with the greatest satisfaction. They will also surely acknowledge the valuable part played by the Annales here, not only in informing the member countries reasonably speedily of work which has been undertaken elsewhere—but also in affording, through its regular publication, the necessary opportunity for the scientists of different countries to see how their own work can be associated with that of their colleagues elsewhere. This can usually be done with no disadvantage, and often considerable gain to their own programme, as several countries have already found.

This report would not be complete without reference to the application by the various governments in April 1954 of the regulations of the Fishery Convention of 1946. Many snags will be met, but they are already being anticipated and dealt with, one by one, by the Permanent Commission. In this vital work the Commission must rely more and more upon the Liaison Committee set up by the Council, just as that Committee must rely upon the collective knowledge of the relevant Sub-Committees when questions are put to it. Here again, co-ordination will play an essential part if we are to secure the most profitable and economic exploitation of the fish stocks in the area.

Accounts of the investigations of the herring stocks have been reported to the Herring Sub-Committee.

The following reports have been received from representatives of the member countries.

Belgium

(E. Leloup).

Hydrographical Observations were taken aboard the lightship "West Hinder", the school-ship "Commandant Fourcault", and the fishery research vessel "Hinders". For details see the reports of the Hydrographical and Plankton Committees.

Work on the Fish Species.

Hake. As during the preceding years, the study of the hake was continued. As regularly as possible, measurements were carried out on this fish as landed at the fish market of Ostend, in order to provide the distribution of the cm.-lengths and its variations throughout the year.

Sole. Experimental fishing with trawl-nets of different mesh widths was carried out during the year. The main object of these experiments was the study of the saving effect of those nets and in particular as regards the sole fishery. A trawl-net with cod-end meshes of 80 mm. and a covernet of 70 mm. meshes was used.

Sprat. A study of the yearly sprat concentrations in the southernmost area of the North Sea (French and Belgian coastal waters) was made during the months of October—November.

Herring. See Herring Sub-Committee.

Mytilius edulis, Nephrops norvegicus and **Shrimp.** See Shellfish Committee.

Manipulation of the Material.

Determination of the catch (fish, shellfish, and invertebrates).

Records of the number and lengths of all fish. Also the total weight of each species of fish.

The weight of the fish per species found in the 80 mm. net and in the 70 mm. covernet was recorded separately.

Denmark

(E. Bertelsen).

Work at Sea.

In 1953 the research ship "Dana" worked in the North Sea from 24. April to 1. June and from 24. to 29. August. The routine survey along the lines R and S of the North Sea hydrographical programme was made between 28. April and 3. May (hydrography, stramin-net and Hensen-net hauls, etc.). Tagging of plaice, bottom sampling and fishing with Danish seine and different trawls was carried out in various localities.

The hydrography of the "Bløden" ground and the occurrence of herring in this area was investigated by "Dana" in April, May and August and by "Jens Væver" and "F. V. Mortensen" on seven cruises during the year.

In June "Jens Væver" carried out experimental trawling for sole along the coast of Jutland, and made quantitative and qualitative investigations on the stock of fish in the Horns Reef area. The effects of different mesh-sizes in the cod-end and of different ground ropes were investigated at the same time.

In July the cutter collaborated with the English research ship "Sir Lancelot" on comparative fishing experiments.

In the Waddensea the young-plaice-trawl was used from a motor boat in June, August and October when 132 stations were operated.

Work on the Fish Species.

Plaice. The stock of young plaice in the Waddensea and in the Horns Reef area was studied as in previous years. Market measurements of plaice from 60 cutter landings were made at Esbjerg during June, July, August, September and October. Samples of the plaice from two of these landings have been age-analysed. 1,300 plaice were marked in the central North Sea.

Herring. See the report to the Herring Sub-Committee.

Other Fish. During the cruises measurements and material for age determination of several species were secured.

England

(R. S. Wimpenny).

Work at Sea.

Most of the sea-work in the Committee's area was carried out by the steam trawler "Sir Lancelot" which made fifteen cruises. Of these, three were devoted to the international plaice investigation off the Dutch coast and took place in January, April and July; three others (two in May and one in October) dealt with the benthos of the Dogger and Dutch coast areas; two (one in June and one in October) were concerned with the hydrography of the Southern Bight; one in June covered the plankton of the NE. coast on a young-plaice census, while the remaining five were comparative fishing assignments. The "Sir Lancelot" also included in these cruises the conduct of the Flamborough Line observations each month from April to August. These observations for August were done by the motor trawler "Platessa".

Work on the Fish Species.

General. Work was undertaken on the statistical theory of market sampling with particular reference to problems involved with the estimation of parameters of the true population from market sample data. In conjunction with Scottish Home Department scientists, investigations were made on the relative mesh selection in Danish seines and trawls. It was found that for haddock the equivalent in selection of a trawler having an 80 mm. mesh was a seiner with a mesh rather smaller than 70 mm.

Comparisons were also made between the fishing powers of trawlers and Danish seiners using statistical returns.

Cod. Work on the North Sea cod was restricted to 34,000 length measurements made during the year at North Shields.

Haddock. As a result of mesh selection investigations it has emerged that 50 % of haddock 3.3 times the mesh size are likely to be released if they enter a trawl. 8,500 haddock measurements were made on Grimsby markets.

Plaice. Tank experiments on developing larvae have enabled the effects of precocious hatching and subsequent abnormalities to be followed up and to be

identified with similar abnormalities found in the sea. Young-plaice-trawl hauls were continued off the Yorkshire coast in June when the catch of I-group individuals was found to be higher per unit time than in the previous years for which comparable figures are available. Work has also continued on an evaluation of the plaice feeding grounds on the Dogger end off the Dutch coast.

At Grimsby and Lowestoft 152,000 plaice were measured during the year and age determinations were made from 3,000 otolith samples. The age-determination results showed that the reduced mortality first noticed in 1951 has been maintained.

Sole. Otolith and vertebrae samples to the number of 200 were collected at Lowestoft market, and some experiments on the mesh selection of this species were made on the research ship. The latter showed that 50 % of the soles entering a trawl and which were 3.5 times the mesh size, were released.

France

(J. Ancellin).

Travaux à la Mer.

L'aviso garde-pêche "Ailette" de la Marine Nationale a exécuté en Août-Septembre 10 stations hydrologiques, limitées à 80 mètres.

Des pêches de plancton et des observations hydrologiques ont été effectuées à bord du garde-pêche de Boulogne "Administrateur Ancelle" aux stations fixes saisonnières prévues au large du littoral compris entre la Somme et Dunkerque.

Les sections hydrologiques en Manche ont été poursuivies en collaboration avec les services du Ministère de l'Agriculture et des Pêches de Grande-Bretagne.

Une sortie en mer a été effectuée en Mai du nord-est du Dogger Bank (observations sur le maquereau) et une autre en Novembre sur les lieux de pêche du hareng dans le sud de la Mer du Nord.

Espèces étudiées.

Les recherches ont porté sur la répartition en profondeur du maquereau dans la région d'Utsire et sur la croissance de ce poisson; sur la composition du stock des célans (*Clupea pilchardus*) de la Manche; elles ont également porté sur les rendements de la pêche des principales espèces capturées par les chalutiers de Boulogne notamment au large de la Norvège.

Germany

(A. Bückmann).

Work at Sea.

A cruise of the Research Vessel "Gauss", between 2. and 27. March, was made in the area between the German and Dutch coasts and the Dogger Bank. Investigations were carried out on (1) the hydrographical situation (S ‰, t° C., turbidity, nutrients, current measurements by paddle-wheels and from anchored vessel); (2) plankton (quantity of seston, content of chlorophyll and albumen, fluorescence of sea water, plankton estimations); and (3) fish fry. The German Hydrographic Institution, the Department of Fishery Biology of the "Max-Planck-Institut für Meeresbiologie" in Wilhelmshaven, and the "Institut für Meereskunde" in Kiel took part in these investigations. In addition, the "Uthörn" worked in the same area from 2. to 17. March at 40 stations.

Investigations of fish fry were carried out from January to August in the Jade area, at least once a month, by the shrimper "Seehund", and were extended along the east-Frisian coast in April by the "Uthörn".

The investigations of the "Biologische Anstalt Helgoland" into the effect of climatic changes on the abundance and distribution of plankton organisms and fish fry, in the first place of summer spawning species, were continued. Quantitative hauls with the Hensen egg-net were made at 22 stations during May, and at 59 stations between 19. June and 7. July, in the area south of 55° N. and east of 3° E.

Investigations with the cutter-trawl on the fish stock, and with the Van Veen grab on the bottom fauna, were made by the "Uthörn" between 8. and 20. May at 20 stations, between 22. and 31. July at 9 stations, and between 27. August and 9. September at 20 stations.

The "Institut für Netz- und Materialforschung, Bundesforschungsanstalt für Fischerei" continued their investigations of the trawl in action on commercial cruises of trawlers, by means of specially devised measuring apparatus. Observations were made on board lightvessels on the rate of disintegration of cellulose in submerged samples of netting. Moreover, trials were made with sets of perlon drift-nets during commercial lugger cruises.

The "Institut für Küsten- und Binnenfischerei, Bundesforschungsanstalt für Fischerei" did some experimental work on electric angling for tunny and on tunny marking during late September and October on board the "Uthörn". The investigations into the conditions of organic production in the brackish water area of German estuaries were continued on board the "Uthörn" in December, and by monthly cruises in the Elbe between Cuxhaven and the mouth of the Lühe.

Work on Fish Species.

Census of the German Bight ("Biologische Anstalt Helgoland" and other institutes):— Age and growth census of the plaice stock in the German Bight in May, July and August—September; length and age of 7,700 plaice and 573 soles determined. Investigations of the food of plaice in comparison with the quantity and composition of the bottom fauna. Investigations on the beginning, intensity and duration of *rigor mortis* in plaice, cod, and whiting under varying conditions. Abundance of the 0-group of plaice and sole in the Waddensea area of the Jade to Spiekeroog.

Abundance of fry ("Max-Planck-Institut" and "Biologische Anstalt Helgoland"):— Distribution and abundance of the fry of plaice, cod, whiting, flounder, and dab during the March cruises in the area between the German and Dutch coasts and the Dogger Bank, and in the Jade inshore waters. Distribution and abundance of the fry of summer spawners (sole, mackerel, pilchards, anchovies). Work on experimental ecology ("Max-Planck-Institut"):— Feeding experiments with plaice in the aquarium. Behaviour of copepods and other plankton forms in stratified water. Development of an apparatus for recording the diurnal changes in the swimming activity of fish.

Tuna:— During the tuna investigations various marking methods have been tried including the tagging of 13 tunas (using Norwegian fishing-hooks) within the area of Bolders-Bank/Bruceys-Garden. The aim of these markings was to furnish evidence of the migrations of the tunas. Bait and feeding trials showed that the number of bites can be significantly increased by provision of abundant bait. On the market, 668 measurements of length and weight of landed tunas have been made.

Incidental catches of whitefish:— In connexion with the question of the incidental catch in fishing for oil-herrings, 35,000 measurements of unsorted samples have been made on the Cuxhaven market. They showed that the incidental catch in 1953 —being 11.6 % of the total weight—was relatively small. The total catch in 1953 consisted of 88.4 % herring, 4.6 % sprat, 4.2 % whiting, and 2.8 % haddock, of which 2 % were undersized according to the 1946 Convention.

Parasites:— Codfish, whiting, and haddock have been examined with respect to the damage done by *Lernaeocera branchialis* (*Copepoda parasitica*). Infected fish are mostly underweight when compared with equally large fish that have not been attacked. Whiting are 5—10 % underweight, codfish and haddock some 20—30 %.

Market investigations:— Measurements and age determination of 3,500 saithe from the northern North Sea.

Netherlands

(L. K. Boerema).

Work at Sea.

The "Antoni van Leeuwenhoek" carried out 30 cruises throughout the year.

During January, April, July and October the long-term series of routine trawl surveys was continued along lines seaward from the Dutch coast. Additional observations on the diurnal variation in the catches were made to eliminate sampling errors. Special attention has been paid to the plaice and the sole, but the other fish species have been recorded and partly measured. Information about the composition and the fluctuations of the plaice population was derived from the otolith readings and from the length data. Bottom samples and plaice stomachs, to study the food conditions of the plaice, were obtained in the Dutch coastal area on behalf of the English investigations on this subject.

Plankton samples were taken during February and March; spawning herring were caught in September (cf. report to Herring Sub-Committee).

In December extensive mesh experiments were started in order to compare the catching power of different twines and meshes.

In May, June, July, and November investigations were carried out on fishing gear; measurements of spread, tilt, angle of attack of the otter-boards, height of the trawl-net, pull in the warps and in the legs between the otter-board and the net were obtained.

The "Antoni van Leeuwenhoek" visited Lowestoft twice during the year to co-ordinate the work with the English fisheries research. In February she assisted the rescue fleet in the flooded areas in Zeeland.

During the summer months some preliminary fishing experiments were made along the beach with a small beam-trawl to study the density and the behaviour of the 0-group of the plaice.

Plankton. As a part of the plaice investigations, six cruises of the "Antoni van Leeuwenhoek" were carried out during February and March to study the younger stages—eggs and larvae—of the plaice. The problem of reliable sampling was examined:—data on the patchiness of eggs and larvae, also of other fish species and some invertebrates, were collected by means of successive hauls of a Hensen-net and of other plankton nets in a restricted area. The vertical distribution of plaice larvae and the reaction of larvae on similar nets of different colour were studied.

Some observations were also made on the distribution and the density of eggs, larvae and the youngest bottom stages near the Dutch coast.

Norway

(A. Dannevig).

Hydrography.

See Hydrographical Committee.

Biology.

Plankton. Investigations on the food of the sprat have been continued in some fjords of Western Norway (see Plankton Committee).

Herring. The investigations were continued much on the same lines as previously. A report of the work is given to the Herring Sub-Committee.

Mackerel. The routine investigations on age and growth have been continued. Tagging experiments were carried out with success in several localities off Western Norway.

Sprat. The distribution of larvae during early summer has been studied in order to locate the spawning grounds of this species.

Scotland

(H. Wood).

Surveys by Scottish research vessels extended from the middle North Sea to Iceland and included the

waters to the west of Scotland and round the Faroe islands. During the year nine traverses were made of the Faroe-Shetland Channel; although the basic assessment of the flow of Atlantic water between Faroe and the Shetland Islands has now been virtually completed, observations are being maintained in view of the influence of the Atlantic on the productivity of the North Sea. An assessment has been made of the seasonal distribution of inorganic phosphate and oxygen content of waters extending from the North Dogger to the Faroe plateau, and evidence has been found that certain organic substances extracted from very dilute concentrations can have an important influence on marine productivity. Plankton sampling has been carried out in the whole area investigated. Work on the productivity of the Fladen area and the distribution of fish eggs and larvae, particularly herring and haddock, has been continued.

The intensity of haddock spawning in the North Sea was similar to that in 1952 but the centre of spawning lay further to the east. Evidence was found in March of an important spring herring spawning ground near the edge of the Continental Shelf north of North Rona, while a large number of herring larvae were produced off the north-east coast of Aberdeenshire in August and September. In July, when the Shetland herring fishery was almost a complete failure, the grounds within 30 miles of Shetland were heavily populated with the planktonic gastropod *Limacina*; at the same time, on the extreme easterly grounds where some good shoals of herring were located, *Limacina* was much less conspicuous and *Calanus* much more abundant in the plankton.

Detailed statistics relating to drifter catches of herring and the analysis of herring samples were maintained as in the previous year. While the drift-net fishery at Shetland was a failure that from the ports of Fraserburgh and Peterhead was very successful. The herring population off the north-east coast of Scotland and in the Minch during summer and autumn consisted predominantly of three- and four-year-old fish. Herring of the spring spawning type were scarce on all Scottish fishing grounds. Tagging results confirmed those of the previous year, but the proportion of recoveries from tagging experiments in the Minch remains well below that of experiments in the north-western North Sea.

A study of the growth of haddock in the North Sea has revealed important growth variations from year to year, with the haddock from the central part of the North Sea showing a better growth than those from more northerly North Sea grounds.

Bottom fauna surveys have shown important differences between Aberdeen Bay and St. Andrews Bay and substantial seasonal fluctuations have been noted in the bottom fauna on Smith Bank (Moray Firth). Attention has been given to lobster storage and transport problems. A special investigation into the selective action of the Danish seine-net and the otter-trawl on a round-fish population was carried through in collaboration with three commercial vessels, two seiners and a trawler, and revealed important differences in selectivity between the seine-net and the trawl.

Some progress has been made in the development and study of the behaviour of different types of fishing gear, while some attention has been given also to the development of electrical equipment for use in experimental fishing.

The Continuous Plankton Recorder survey conducted from the Oceanographic Laboratory, Edinburgh (Scottish Marine Biological Association), has been continued as in previous years (see report to the Plankton Committee). The herring/plankton investigations from the same laboratory have been continued, in the closest collaboration with the herring investigations of the Marine Laboratory, Aberdeen.

Sweden

(A. R. Molander).

Work during 1953 included fishing experiments (line fishery), and investigations of ling in the western and eastern parts of the northern North Sea (Shetland-Tampen), during May—June.

Publications.

Aurich, H. J., 1953: "Verbreitung und Laichverhältnisse von Sardelle und Sardine in der südöstlichen Nordsee und ihre Veränderungen als Folge der Klimaänderung." Helgoländ. Wiss. Meeresunters., **4**, 175.

Beverton, R. J. H., 1953: "Some observations on the principles and methods of fishery regulation." J. Cons. Int. Explor. Mer, **19**, 56.

Bückmann, A., 1953: "Fischbrut und Evertebraten — Grossplankton auf der Fahrt der Gauss im Februar—März, 1952." Ber. Deutsch. Komm. Meeresforsch., N. F., **13**, 154.

Gillbricht, M., 1953: "Kolorimetrische pH-Messung in Seewasser unter Verwendung von Kresolrot." Kurze Mitt. Max-Planck-Inst., Wilhelmshaven, **2**, 1.

— 1953: "Die Belüftung von Seewasseraquarien." Kurze Mitt. Max-Planck-Inst., Wilhelmshaven, **3**, 1.

Glover, R. S., 1953: "The Hardy plankton indicator and sampler: a description of the various models in use." Hull Bull. Mar. Ecol., **4** (26) 7.

Hempel, G., 1953: "Meristische Merkmale von Hornhechten aus dem Jadebusen und dem Golf von Neapel." Kurze Mitt. Max-Planck-Inst., Wilhelmshaven, **2**, 20.

Kotthaus, A., 1954: "Die Schollenbevölkerung der Deutschen Bucht 1952 und 1953." Fischwirtschaft, **6**, 13.

Lucas, C. E., 1953: "Report of Director of Fisheries Research." Rep. Fish. Scot., 1952, 49.

Mann, H., 1953: "*Lernaeocera branchialis* (Copepoda parasitica) und seine Schadwirkung bei einigen Gadiden." Arch. Fischwiss., 1952/53, 133.

Meyer-Waarden, P. F., & Tiews, K., 1954: "Grösse, Umfang und wirtschaftliche Bedeutung der deutschen 'Ölheringsfischerei' in der Nordsee." Arch. Fischwiss.

Rae, B. B., 1953: "The occurrence of lemon sole larvae in the Scottish plankton collections of 1929, 1930 and 1931." Mar. Res. Scot., 1953, No. 1.

— and Wilson, E., 1954: "Rare and exotic fishes recorded in Scotland during 1952." Scot. Nat., **65**, 14.

Rae, K. M., 1953: "Continuous plankton records: list of records, 1950—53." Hull Bull. Mar. Ecol., **4** (25) 1.

Shelbourne, J., 1953: "The feeding habits of plaice post larvae in the Southern Bight." J. Mar. Biol. Ass. U.K., **32**, 149.

Simpson, A. C., 1953: "Some observations on the mortality of fish and the distribution of plankton in the southern North Sea during the cold winter, 1946—47." J. Cons. Int. Explor. Mer, **19**, 150.

Thomas, H. J., 1954: "Some observations on the distribution, biology and exploitation of the Norway lobster (*Nephrops norvegicus* L.) in Scottish waters." Mar. Res. Scot., 1954, No. 1.

Vaux, D., 1953: "Hydrographical conditions in the southern North Sea during the cold winter of 1946—47." J. Cons. Int. Explor. Mer, **19**, 127.

Wimpenny, R. S., 1953: "The Plaice." The Buckland Lectures for 1949, 145 pp. London: Arnold.

Transition Area Sub-Committee.

1953

By Aage J. C. Jensen

Denmark

(Aage J. C. Jensen).

Quantitative and qualitative investigations of fish larvae by the 2-m. ring-trawl, and of the older fish by the eel-tog and the standard trawl were carried out as usual from March to December from the S/S "Biologen". Quantitative investigations of 0-group plaice and flounder on the coasts were carried out from the M/B "Havkatten" during July—September. These investigations were carried out in Skälderviken and Laholm bay by permission of the Swedish government because the Swedish fishery investigations could not get them done this year. Special investigations were started on the occurrence of the 0-group flatfish by day and night up to the 1 m. contour near the coasts.

Investigations in fjords and bays where land-reclaiming has been proposed were carried on from the motorboat.

Hydrography and plankton was investigated from S/S "Biologen". Regular collections of plankton have been continued at some lightvessels. ^{14}C determinations of the plankton production in the Great Belt have been started.

The bottom invertebrate fauna has been investigated especially in the Limfjord in June and August as in previous years with the grab from the S/S "Biologen" and also in other waters, e. g., for investigations of pollution. At the laboratory, samples of commercial fish have been analysed. The fishery control has assisted by analysing samples of fish for industrial processing.

The transplantations of plaice in the Limfjord were carried out as usual. It was intended to take most of the fish from off Esbjerg to the southern Kattegat, the Sound, and the Belt Sea but a poor stock of small fish and other conditions prevented this scheme being carried out. Age and race of the transplanted plaice were determined as usual and also marking experiments were made as normally. In the Limfjord a new method was used with tags placed under the skin in addition to the Petersen disks, and also, in December, with a new plastic cylinder fixed with nylon.

Germany

(R. Kändler).

Institut für Meereskunde der Universität Kiel.

Hydrography.

Observations on temperature, salinity, oxygen and nutrient salts of the sea water were made during the cruises of the R/S "Südfall". These were carried out once or twice a month in Kiel Bay and in coastal waters, especially in the Schlei, Kieler Förde, and Kiel canal. In the Kieler Förde daily surface samples were taken for temperature and salinity measurements. Special investigations on the stratification and circulation in the western Baltic were made.

Plankton.

The regular Hensen-net sampling of macroplankton (eggs and larvae of fish, medusae, larvae of decapods) from the lightship "Fehmarnbelt" was begun again after an interruption of 10 years. For the same purpose hauls with the Hensen-net, Petersen young-fish-trawl, and ring-trawl were carried out on each cruise in sea.

By plankton sampling with a suction hose the settlement and vertical distribution of larval stages of bottom animals were studied in connexion with hydrographical factors.

Benthos. A survey of the bottom fauna in Kiel Bay was carried out throughout the whole year in order to get information on the quantity, seasonal variation, and renewal of fish food.

In the autumn of 1953 larvae and young bottom

stages of *Branchiostoma lanceolatum* were found in Kiel Bay which has never happened before.

Microbiology. In order to extend the investigations on the influence of introducing sewage in the coastal waters, a study of Phycomycetes and Ciliata has begun with regard to the dependance of different forms on the salinity and cleanness of the water.

The Fish.

Eggs and Larvae. Cruises with R/S "Südfall" during the spawning time and regular plankton sampling from the lightship "Fehmarnbelt" served as a survey of the breeding of food fish. Special attention was paid to the herring fry in the coastal waters (Flensburger Förde, Schlei, Kiel canal and Förde, Untertrave).

Flatfish. The fertility of plaice, flounder, dab, and turbot was studied by counting ripening eggs in the ovaries in connexion with age and size determinations.

Investigations on the yearly renewal of teeth gave an interesting explanation of the seasonal change in feeding of plaice.

Cod. Investigations on growth and fat metabolism were continued.

Herring. The growth of the autumn brood of 1952 was found to be fairly good in some parts of the coastal waters. Investigations have been started on the composition of herring oil in relation to stage of maturity and on the importance of some fatty acids for the ripening of gonads.

Mackerel. Further data on the spawning in the western Baltic was collected, and investigations on the food were carried out.

Norway

Statens Utklekningsanstalt, Flødevigen
(Alf Dannevig).

Hydrography.

Observations on the temperature and salinity of the sea water were taken every working day at Flødevigen at 0, 1 and 15 m. below the surface.

In the Skagerak and in the coastal waters up to Karmøy 320 hydrographic stations were worked.

Biology.

Eggs and Larvae. Material was collected from the Oslofjord, the Langesundsfjord and from Skagerak.

Gadidae. The 0-group. Experimental fishing with a beach-seine in the littoral region has been carried out according to the pre-war scheme, 75 hauls have been made on the Skagerak coast and 51 in the Oslofjord. This year the fjords near Langesund were also fished with the beach-seine, 17 hauls being made.

Older Fish. Experimental fishing with traps was continued at Flødevigen. The cod hatchery was working during spring.

Herring and Sprat. Samples have been collected from different parts of the Skagerak coast.

The Laboratory. Experiments on the hatching and rearing of the eggs and larvae of different species were carried out.

Shellfish.

Lobster. Statistics from individual fishermen have been collected according to the pre-war method. Experiments with lobster rearing were successful.

Oyster. In the artificial pond at Flødevigen we had a good spawning. The spatfall was, however, not satisfactory. In the natural pond Jorandstadkilen, the collectors were crowded with spat of a good size.

Institute of Marine Research, Bergen.

Prawns. The investigation started in 1952 on protective measures in the fishery for deep-sea prawns was concluded in 1953. A report on the work will appear in the *Annales Biologiques*.

Norway Lobster. A study of the commercial catches of Norway lobster (*Nephrops norvegicus*) in Skagerak has been taken up by the Institute of Marine Research. It is the intention to examine how the present minimum size regulation affects the stock and the commercial fishery.

Sweden

(Arvid R. Molander).

Work on the Fish Species.

Gadidae and Flatfish. Statistics have been collected of the landings of haddock, witch, and plaice in Göteborg.

Sprat. The investigations of sprat have been continued on the same lines as in recent years. They were concentrated on the relation between the sprat fishery and meteorological and hydrographical factors.

Publications.

Banse, K. and Lefevere, S.: "Funde von *Branchiostoma lanceolatum* in der Kieler Bucht." Kieler Meeresforsch., **10**, 1954.

Dannevig, Alf.: "Statens utklekningsanstalt ved Flødevigen. Beretning 1938—1952." Årsber. vedk. Norges Fisk. 1952, 12, Bergen, 1953.

— „Østerskultur på Skagerakkysten". Naturen, Nr. 13 Bergen 1953.

Kändler, R.: "Hydrographische Untersuchungen zum Abwasserproblem in den Buchten und Förden der Ostküste Schleswig-Holsteins." Kieler Meeresforsch. **9**, 1953.

Lühmann, M.: "Jahreszeitliche Schwankungen im Fettgehalt der Ostseeheringe." Die Fischwirtschaft, 1953.

— "Über die Fettspeicherung bei Ostseeheringen und ihren Jahresrhythmus in Beziehung zum Fortpflanzungszyklus." Kieler Meeresforsch. **9**, 1953.

Wyrtki, Kl.: "Der grosse Salzeinbruch in die Ostsee im November und December 1951." Ibid., **10**, 1954.

Baltic Area Sub-Committee.

1953

By Chr. Hessle

Reports of work carried out have been received from Denmark, Finland, Germany and Sweden.

Denmark

Biology. (Aage J. C. Jensen).

Plaice, Flounder and Turbot. At Bornholm hauls with the Johansen trawl and the push-net were taken in September 1953.

Hydrography and Plankton.

In April six hauls with the 2-m. ring-net were taken from the S/S "Biologen" in the Møen region and in this region quantitative hauls were carried out in September—October and also south of Scania and round Bornholm in September. At the same time vertical hauls with the Hensen-net and hydrographical observations were made.

Finland

Biology. (Sven Segerstråle).

Investigations have been carried out on the biology of the herring in the archipelago of the south-western coast of Finland and of the stock of fish in the vicinity of Helsingfors.

Benthic Food.

Quantitative research on the occurrence of Chironomidae have been undertaken at the biological station of Tvärminne.

Hydrography and Plankton.

Plankton samples were collected three times a month from Jungfruskär on the south-western coast of Finland and twice a month from the lightship "Helsinki" in the Bay of Finland.

Germany

Biology. (R. Kändler).

Plaice, Flounder and Dab. In connexion with similar investigations in the western Baltic, the fertility of plaice, flounder and dab was studied. The ripening eggs in the ovaries were counted from specimens of different size and age. Further attention was paid to the frequency and variability of abnormal pigmentation in these flatfishes.

Sweden

(Chr. Hessle).

The research vessel "Eystrasalt" worked in the southern Baltic in July and August, in the Bothnian Sea from September to November and in the central Baltic in November and December. The research vessel "Skagerak" made cruises in the central Baltic and in the Bothnian Sea in July.

Biology.

Plaice and Flounder. The stock of flatfish was investigated during "Eystrasalt's" cruise in July and August on the south coast of Sweden and in the Bornholm area.

Cod. Samples of cod were collected by "Eystrasalt" in the Sea of Åland in November and in the southern Baltic in July and August. The samples have been analysed for length, age and maturity.

Herring. Investigations on the stock of herring in the southern Baltic and the Bothnian Sea for the occurrence and the composition of the stock were undertaken with "Eystrasalt". In the Bothnian Sea the purpose of the investigations was chiefly to find out the cause for the disappearance of the autumn-spawning herring in recent years.

Hydrography and Plankton.

Daily hydrographical observations were made from six lightships.

A great number of hydrographical observations were made during the cruises with the "Eystrasalt" along with the biological work and also with the "Skagerak". The investigations from "Skagerak" were undertaken partly in co-operation with Finnish hydrographers.

Quantitative samples of plankton were collected with the Hensen-net in connexion with the biological investigations in the Bothnian Sea with the aim of finding a correlation between the occurrence of the plankton and the herring fishery.

Quantitative samples of plankton were also collected twice a month from the lightships "Hävringe", "Finngrundet" and "Norströmsgrund".

In the Bothnian Sea some investigations were undertaken on the extension of the disease on *Eurytemora hirundoides* which was observed for the first time in 1950.

Aids to Fishing.

The research vessel "Eystrasalt" was commissioned for locating herring shoals with the echo-sounder in the archipelagoes at the Swedish coast of the central Baltic in November and December. Experiments with pelagic trawls, partly in collaboration with fishing boats, were carried out in the Bothnian Sea in October.

Salmon.

See reports to the Salmon and Trout Committee.

Comité Atlantique.

1953

Par Jean Furnestin

L'activité des différents pays s'est manifestée dans les domaines de l'hydrologie, du plancton, des sédiments et de la biologie.

I. Hydrologie.

Angleterre
Belgique
Danemark
Portugal

Pas d'observations dans le secteur du Comité.

Ecosse.

En Août 1953, le navire de recherches "Scotia" a effectué des stations hydro-planctoniques entre la côte ouest d'Ecosse et Rockall, ainsi que des pêches au chalut et aux palangres sur le banc de Rockall.

(J. H. Fraser).

Espagne.

Comme les années précédentes, deux campagnes océanographiques ont été effectuées par le navire de recherches "Xauen". La première, pendant les mois de Janvier et Février, avec départ du Détroit de Gibraltar (Ceuta) et parcours de toute la zone de la Méditerranée marocaine, a permis de réaliser des sections hydrographiques avec détermination de température, S $^0/_{00}$, O et phosphates.

La seconde campagne a eu lieu aux mois de Juillet et d'Août: elle a eu pour point de départ Malaga et s'est achevée à la frontière franco espagnole du Golfe de Gascogne. Soixante-dix-sept stations ont été effectuées sur le parcours ainsi que sur le parallèle 43° N., jusqu'au 11°33′ W., et aux 8°, 6° et 4° W., sections qui ont atteint les 500 mètres avec prises de température et déterminations chimiques de S $^0/_{00}$, O, et phosphates.

Des observations régulières ont été effectuées dans les zones des laboratoires du littoral (Vigo, Santander, Saint-Sébastien).

Une troisième campagne a été réalisée aux mois de Février et Mars par le morutier "Vendaval" à Terre-Neuve et les mêmes déterminations physico-chimiques que celles dont il a été question ci-dessus, y ont été effectuées. (J. Cuesta).

France.

Des observations hydrologiques ont été effectuées: au centre et au large du Golfe de Gascogne sur les pêcheries de germons en Juin, fin Juillet et en Septembre, en zone côtière sur les pêcheries de sardines, en Mars de l'Ile d'Yeu à l'Ile d'Oléron, en Juin des Sables d'Olonne à Arcachon, en Juillet des Sables d'Olonne à l'Ile de Ré et en Septembre-Octobre devant l'Ile de Ré et Saint-Gilles Croix-de-Vie.

Au total 324 observations de températures et de salinités ont ainsi été faites. (R. Letaconnoux).

Maroc. Quatre campagnes océanographiques ont été effectuées par l'Institut des Pêches avec le garde-pêche et le "Jean-François" dans la zone du plateau continental marocain et la région du détroit canarien, entre le Cap Spartel, le Cap Juby, le Banc Conception et les îles Canaries.

Températures observées et échantillons d'eau de mer prélevés à 5, 10, 25, 50, 100, 200 et 400 m. le long de 17 radiales, à raison de 4 à 6 stations par radiale.

Observations sur les lieux de pêche à la sardine et au thon.

A.O.F. Relevés de température dans la région du Cap Vert et du Golfe de Guinée. (J. Furnestin).

Irlande.

Continuation des relevés de températures à bord du bateau-feu "Conigsbeg".

La corvette "Cliona" du service naval d'Irlande, a pris part à une croisière hydrologique en liaison avec les recherches sur la ponte de la plie en Mer d'Irlande. Le matériel récolté a été transmis pour étude au laboratoire de Lowestoft.

(A. E. J. Went).

II. Plancton.

Belgique
Danemark
Irlande
Portugal

Pas d'observations dans le secteur.

Angleterre.

Pêches de plancton à bord des navires météorologiques à la station "J" par 52°30′ L.N. et 20° W. 35 pêches verticales de 100 m. à la surface ont été effectuées pour l'étude du zooplancton.

(W. C. Hodgson).

Espagne.

Des pêches de plancton ont été effectuées à l'aide de filets Standard, à toutes les stations des croisières réalisées par le "Xauen" et le "Vendaval".

Au laboratoire de l'"Instituto de Investigaciones Pesqueras" à Vigo, ont été réunis et étudiés des échantillons de plancton recueillis par les bateaux de pêche pendant la campagne du thon et de l'albacore dans le Golfe de Gascogne. Ce laboratoire a effectué quotidiennement dans les eaux locales des évaluations de pigments par la méthode de Harvey.

(J. Cuesta).

Ecosse.

Les échantillons de plancton récoltés par H.M.S. "Challenger" depuis l'entrée de la Manche jusqu'à 18—20° W. environ, d'Avril à Juillet, ont été étudiés au laboratoire d'Aberdeen. (J. H. Fraser).

France.

Des pêches régulières de plancton ont eu lieu au cours des sorties des navires utilisés par l'Institut Scientifique et Technique des Pêches Maritimes, particulièrement sur les lieux de pêche du germon, du maquereau et de la sardine.

Le plancton du bassin d'Arcachon, et celui des gisements coquilliers des côtes de France ont fait l'objet de recherches régulières particulièrement aux moments des émissions de larves. (P. Desbrosses).

Maroc. 350 échantillons de plancton de surface ont été prélevés entre Tanger et les îles Canaries, au cours de 4 campagnes trimestrielles.

Nombreux prélèvements sur les lieux de ponte de la sardine et de l'anchois en vue d'une étude sur les œufs et les larves.

L'étude du zooplancton est poursuivie au laboratoire de l'Institut des Pêches. (J. Furnestin).

III. Bathymétrie et Sédiments.

Espagne.

63 échantillons de fond ont été recueillis pendant la campagne d'été du "Xauen". L'étude des échantillons récoltés en 1952 a été poursuivie au laboratoire de Saint-Sébastien. (J. Cuesta).

Maroc.

Relevés topographiques de la zone côtière.
(J. Furnestin).

IV. Biologie.

A. Clupéidés.

La Sardine (*Sardina pilchardus* Walb.).

Angleterre. Plusieurs échantillons de sardines ont été examinés pour détermination de la taille, de l'âge, de la maturité, de la formule vertébrale; la classe de 2 ans s'est montrée riche. (W. C. Hodgson).

Espagne. L'étude biométrique de l'espèce a été poursuivie dans les laboratoires côtiers.

Le laboratoire de Vigo s'est appliqué à l'étude de la fécondité de la sardine en fonction de la taille, ainsi qu'à des recherches sur la regression du nombre de branchiospines par rapport à la taille comme caractère différentiel de population. On y a aussi étudié les variations saisonnières dans la composition chimique de la sardine par groupes suivant la taille.
(J. Cuesta).

France. Comme au cours des années précédentes, des observations biométriques régulières ont été effectuées sur les pêcheries de sardines de Mai à Octobre au large des côtes de Vendée et de Charente-Maritime. Un résumé des résultats obtenus est publié dans les *Annales Biologiques*. (R. Letaconnoux).

Maroc. L'étude de la sardine marocaine, de Tanger au Cap Juby: âge et moyenne vertébrale a été poursuivie.

Des observations ont été faites sur la biologie et la morphologie des sardines mauritaniennes.
(J. Furnestin).

Portugal. Examen hebdomadaire d'échantillons prélevés à Leixões (44 échantillons, 8785 sardines) et à Lisbonne (42 échantillons, 8135 sardines) au point de vue: taille, engraissement, état de maturité sexuelle, âge, croissance, moyenne vertébrale.

Mensuration (taille) d'échantillons quotidiens à Portimão (22800 sardines, Mars à Décembre).
(A. M. Ramalho).

Autres Clupéidés.

Espagne. Les laboratoires de la côte cantabrique ont poursuivi les observations habituelles sur l'anchois (*Engraulis encrasicholus* L.). A l'Institut des Recherches sur les Pêches, les observations ont porté en outre sur le sprat (*Clupea sprattus* L.) qui a fait l'objet de recherches analogues à celles de la sardine; les variations saisonnières dans la composition chimique des deux espèces ont été étudiées.
(J. Cuesta).

Maroc. Les aloses ont été examinées dans les différents bassins fluviaux (Sébou, Souss, Massa) et en mer (espèces, croissance, état physiologique, nourriture, conditions de milieu). (J. Furnestin).

B. Scombridés et Thonidés.

France. Trois sorties ont été faites sur des thoniers en Juin, Juillet, et Septembre, avec mensurations, étude des contenus stomacaux et du plancton.

Maroc. Les recherches portant sur la biologie des Scombridés et Thonidés africains ont été continuées au Maroc ainsi qu'au Sénégal. (J. Furnestin).

Portugal. Continuation des recherches concernant les périodes de maturité sexuelle (avec contrôle histologique), dans les eaux de Dakar et des îles du Cap Vert, en collaboration avec E. Postel de *Auxis thazard*, *Euthynnus alliteratus*, *Katsuwonus pelamis*, *Neothunnus albacora*, *Sarda sarda*, *Orcynopsis unicolor*, *Cybium tritor* et *Acanthocybium solandri*.
(F. Frade).

C. Gadidés.

Belgique. Comme durant les années précédentes, la Belgique a collaboré à l'étude du merlu (*Merluccius merluccius* L.).

Afin de déterminer la distribution des longueurs et de ses variations dans le temps, il a été procédé régulièrement à des mensurations dans la minque d'Ostende.

Le poisson observé était de provenance du Canal de Bristol et du SW. de l'Irlande ainsi que de la Mer du Nord. (E. Leloup).

Espagne. Au cours de la campagne du "Vendaval" à Terre-Neuve études biométriques sur les Gadidés.

France. En Décembre, au cours d'une expérience de chalutage comparé effectuée au large des Sables

d'Olonne, les captures de merlu obtenues avec 4 chaluts de maillages différents ont été étudiées.

Maroc. Résultats nouveaux sur les deux espèces de merlus des côtes marocaine et saharienne. (Cl. Maurin).

Portugal. Observations sur la taille et récolte et étude des otolithes de morue (1067) dans les bancs Dana, Fiskenaes, Fylla, Store Hellefiske (Groënland), par M. Figueiredo. (A. Ramalho).

D. Poissons Divers.

Angleterre. En vue de rechercher les lieux de ponte de la plie (*Pleuronectes platessa* L.) en Mer d'Irlande, 4 sorties ont été effectuées entre Land's End et le Solway Firth de Janvier à Mars: travaux de chalutage, plancton et hydrologie. (W. C. Hodgson).

France. Une expérience de chalutage comparé a été effectuée en Décembre par 4 bateaux de 17 m. utilisant des engins de même ouverture mais de maillages différents (50, 60, 70 et 80 mm.). Le rendement de ces chaluts sur les fonds de 70 mètres, au large des Sables d'Olonne, a été étudié, ainsi que la taille des soles (*Solea vulgaris* Quens.) et des merlus (*Merluccius merluccius* L.). (R. Letaconnoux).

Maroc. Recherches diverses sur les Sparidés (R. Coupé), les Triglidés et Cyprinidés (A. Vincent), les Sciaenidés (J. Dardignac). Biométrie de l'encéphale des poissons (W. Geiger).

Irlande. Des échantillonnages de merlan (*Merlangus vulgaris* L.) prélevés sur le marché et originaires des côtes orientale et occidentale d'Irlande ont été examinés régulièrement par Mlle Elkin: âge, maturité, croissance, nourriture.

Un exemplaire de *Scorpaena dactyloptera* Delaroche a été pêché le 9 Juin 1953 en baie de Dingle par 50 brasses, alors qu'on le pêche d'habitude par plus de 100 brasses dans les eaux profondes du sud et de l'ouest de l'Irlande. (A. E. J. Went).

Portugal. Continuation des recherches faunistiques et techniques (pêche indigène) dans les estuaires de Guinée portugaise en collaboration avec F. Correia da Costa et J. Gonçalves Sanches. Récolte d'échantillons de plancton et déterminations de température, salinité, pH, ammoniac, nitrites, nitrates et oxygène. (F. Frade).

E. Crustacés et Mollusques.

Espagne. Les différents laboratoires ont effectué de nombreuses observations hydrologiques et planctoniques sur les parcs flottants de moules qui pendant l'année ont été établis en grand nombre sur le littoral N. et NW. de la péninsule. Une étude sur le développement de la moule dans la rade de Vigo et sur la fixation de ses larves; une seconde étude sur la fixation des larves d'huîtres (*Ostrea edulis*) et le développement de ce mollusque après fixation; une troisième étude enfin sur les groupements de mollusques dans la rade ont été faites par l'Institut des Recherches sur les Pêches.

C'est dans le même laboratoire encore qu'ont été faites des recherches sur la composition chimique et les variations mensuelles de la coquille Saint-Jacques (*Pecten maximus*). (J. Cuesta).

France. Cf. Comité des Mollusques et Crustacés.

Maroc. Etude des crevettes du talus du plateau continental. (C. Maurin).

Irlande. Des échantillons de coquilles Saint-Jacques (*Pecten maximus*) ont été examinés chaque mois par le Dr. F. A. Gibson en baie de Bantry pour détermination de l'âge, de la croissance et de la maturité. Un grand nombre de ces mollusques ont été marqués dans ce secteur et en fin d'année, 30 % avaient été repêchés, tous sur place ou très près du lieu de marquage. Quelques échantillons de la même espèce ont été examinés sur les gisements de Galway (côte ouest). Les gisements d'huîtres de Clew Bay ont été placés sous la surveillance de M. E. D. Toner (pour les autres travaux, cf. Shellfish Committee). (A. E. J. Went).

F. Eaux Saumâtres.

Maroc. Ecologie des lagunes de Sidi-Moussa et de Moulay-bou-Selham.

Pelagic Committee.

Herring Sub-Committee.

1953

By W. C. Hodgson

I. ATLANTIC WATERS

Iceland

(Árni Friðriksson).

As in the previous years cruises were made with the research vessel "María Júlía" during spring in order to find out the distribution of herring larvae and to make hydrographical observations in connexion therewith. The cruises which also served other purposes took place in April and May. The international herring research programme in the waters north and east of Iceland was carried out in June in cooperation with Danish and Norwegian scientists. The Icelandic part of the plan was, as in 1952, to cover the waters north of Iceland and a triangle of the ocean east and north of Iceland, from Langanes to Jan Mayen, and from there to the south-east corner of Iceland. The aim was, as before, to trace herring by means of echo-soundings and Asdic operation and to observe hydrographical features and plankton occurrence in connexion with the findings and for guidance to find the herring. When the plan had been completed, the research vessels "Dana", "G. O. Sars" and "María Júlía" met in Seydisfjord on the 25. June in order to prepare a short report. Additional material had been received from "Scotia".

It is worth mentioning that the patrol boat "Ægir" (ca. 150 feet) was equipped with Asdic later in the year and the instruments were tried in a cruise off the west, north and east coast in September—October.

During the year more than 9000 herrings were examined off the south and west coast, and the laboratory in Siglufjord was run as usual during July and August. Here, 3634 fish were examined for length, sex, weight, maturity and number of vertebrae. Scales were collected for later investigation of age, type, etc. and the otoliths were also taken. Furthermore, the weight of the gonads were recorded and the maturity factor calculated. In addition 297 herring which had been caught off the north coast in September and October were investigated, and besides this a great number of herring was measured only, especially in connexion with the taggings. Altogether 12,310 north-coast herrings were measured, and about 800 stomachs were examined for food content.

The tagging plan was continued, and the same boat ("Auðbjörg") was chartered as in 1952. The boat operated off the north coast in July, where purse-seine-caught herrings were tagged as usual by internal steel tags (10,181 fish). In August 5090 herring were tagged for the first time off the south-west coast. The herrings were caught in drift-nets by the tagging boat and the Scottish method of drifting was used. The most part of the herrings (4244 fish) were tagged internally, 846 being marked externally with the Scottish "toggle-tag".

155 tags (75 of which were from the herring tagged that year) were found in factories on the north coast and 7 on the south coast. Two of the tags were external, but all 7 tags originated from herrings which were being tagged there. Four of the tags returned on the north coast were from Norway and one from the open ocean (1951).

Denmark

(Å. Vedel Tåning).

At the Faroes and northern waters hydrographical investigations were carried on in connexion with the investigations of the herring concentrations. The herring shoals have been searched for in June by "Dana" with the echo-sounder, and in May, August and September by the fishery-inspection vessel "Thetis" with Asdic.

Norway

(Finn Devold).

General Work.

Routine work was continued in 1953. During the winter season 27 samples were examined from west Norway. From other areas the following number of samples were collected: Norwegian Sea 9 samples, Skagerak 9 samples, fat herring 8 samples and 1 young herring sample. In all, 54 samples, each comprising about 200 herring, were examined. Three cruises were carried out by the R/V "G. O. Sars" in the Norwegian Sea for hydrographical work in connexion with herring investigations. On the first cruise 3.—30. January, the herring shoals were located north of Faroe and followed to the Norwegian coast. The Norwegian herring fishermen were informed daily about the positions of the approaching herring. The second cruise of R/V "G. O. Sars" in connexion with herring investigations lasted from 26. May to 1. August. Great areas of the Nor-

wegian Sea were covered with a fairly dense grid of hydrographical stations in collaboration with the Danish R/V "Dana", and the Icelandic R/V "María Júlía". At the same time herring shoals were located by use of Asdic and echo-sounding devices. In July the Norwegian fishermen were informed three times a day about the positions of the herring.

In November, investigations to locate herring were carried out in Skagerak with R/V "G. O. Sars" and R/V "G. M. Dannevig". The area from north of Faroe eastward to the Norwegian coast was covered twice with a fairly close grid of hydrographical stations and at the same time the herring shoals were located.

Tagging Experiments (Olav Aasen).

The herring tagging experiments were continued in the year 1953. In all 31,971 tagged herrings were liberated in Norwegian waters during 3 cruises to the large-, spring-, and fat-herring districts.

All the experiments in 1953 and earlier years have yielded returns, totalling 726 recoveries in all. Of these 313 were tagged in Iceland.

Special Investigations (Olav Aasen).

The sampling of the "Lusterfjord herring" was continued. In all 2025 herrings were examined. Additional samples from the "Østerbø herring" were secured. These two types of herring belong to local tribes in the Sognefjord area on the west coast of Norway.

II. NORTH SEA AND ADJACENT WATERS

Belgium

(Ch. Gilis).

1. During 1953, the study of the herring concentrations exploited by the Belgian herring trawlers has been continued.
   (a) The full-herring concentrations of the northern and central areas of the North Sea during August, September, October and November (1,537 herrings).
   In order to ascertain the transition of the herring from the stage "'full" to the stage "spent", the study of the full-herring was not —as during previous years—interrupted during the month of November.
   (b) The spent-herring concentrations of the southernmost area of the North Sea:—
   i) in January, end of the season 1952—53 (350 herrings),
   ii) in December, beginning of the season 1953—54 (422 herrings).

The observations cover all biological values: length, weight, sex, stages of maturity, fat, age, vertebrae, keeled scales (K_2), stomachal contents and a biological scale. A complete study of the activity of the trawlers, the fishery, and the landings is also given for both these groups.

2. During the two periods 27-31. January and 8-10. December 1953, temperature observations and water samples were taken on the spent-herring grounds.
3. Herring tagging experiments. — These experiments were carried out aboard the fishery research vessel "Hinders".

Two cruises were organized (27-31. January and 8-10. December 1953). Both were not successful. The Lea tag should have been used.

Denmark

(Å. Vedel Tåning).

Quantitative fishing with the 2-m. stramin net, to locate the spawning areas of herring and to investigate the density of herring larvae has been continued. Samples of herring from commercial catches have been analysed for length, age, race and fat content.

Commercial catches from the "Bløden Ground" have been analysed for length, age, race and fat content. Hydrographical and plankton material from the area has been collected each month from the research vessels "Dana" and "Jens Væver" and from the salvage vessel "F. V. Mortensen". By aid of the fishery control and the cooperative herring-oil factory in Esbjerg catch statistics and information on fishing regions have been collected.

England

(W. C. Hodgson).

The sampling of the herring shoals of the east coast was continued. At North Shields, 3,600 scales were collected and some hundreds of measurements were made on the market. On the Yorkshire coast in August and September, 1,550 scales were examined and 4,000 fish were measured.

The usual examination of the East Anglian fishery was carried out and 3,200 scales were examined. 59,000 herrings were measured at various kippering houses and curing sheds.

The forecasts, which have been produced annually since 1929, have been discontinued because of unprecedented changes which have taken place in the age composition of the East Anglian stock.

A new "race" of herrings has appeared on the East Anglian coast since the war and the sampling of these fish is being continued. These herrings spawn in May and have a vertebral count of about 55.4. The fry from this summer spawning is being collected and studied.

The amount of sampling of the "whitebait" herrings of the southern North Sea has been increased and "racial" examinations of the material are in progress.

Experiments and trials with herring trawls have been made from the research vessels and herrings of good quality have been landed.

In connexion with the experiments on the breeding of young herrings from artificially fertilized eggs, an

apparatus has been designed to keep the young larvae alive in the sea, rather than in laboratory tanks.

The study of the fat content of the adult herrings has proceeded and it has been possible to divide the east coast fish into two distinct groups according to fat content and stage of maturity.

As a result of work carried out with three types of herring tag in 1952, only two types of tag were used during 1953. These were the Hodgson and the Lea hydrostatic. Whereas the Lea tag has been continued to be fitted to the fish by the conventional wire pin and bridle in front of the dorsal fin; a new toggle attachment has been evolved for the Hodgson tag. By means of this the tag is fitted behind the dorsal fin—a position which, because of the negative buoyance of the tag, offers less obstruction to the stabilizing function of the fin, and at the same time renders the tag less likely to be removed by the drift-nets.

As well as using the research vessels "Platessa" and "Onaway", tagging work was started from commercial drifters in Whitby, East Anglia and the Channel areas during the year. A total of 3,376 herrings was tagged and liberated as listed below.

	Research vessels	Commercial vessels	Total
Whitby	407	330	737
E. Anglia.....	1,282	337	1,619
E. Channel	187	833	1,020
	1,876	1,500	3,376

To date, 18 of these fish have been recaptured. Five of these, tagged offshore from Lowestoft, were recaptured on the south coast off Kent and Sussex. The distances ranged between 100 miles, Dungeness, 7 days; 110 miles, Rye, 28 days, and Bognor Regis, 161 miles, 14 days.

France

(J. Ancellin).

The study of the herring populations of the southern North Sea and eastern Channel have been continued during the winter fisheries of 1952/3 and 1953/4. This work has included, during the year 1953, observations on the length, age, maturity and Vert. S. of about 1,000 fish.

Germany

(A. Bückmann).

Institut für Seefischerei, Hamburg.

During 1953 the "Institut für Seefischerei" resumed the herring investigations. The general scheme consisted of the collection of samples from the catches of all types of fishing gear. 239 samples (23,900 herrings) from commercial catches were analysed as to length, weight, maturity and race. Samples were obtained from the following areas: Otterbank, off Shetlands, Vikingbank to Lingbank. Fladen Ground, Gut, off the English and Scotch east coasts, from Dogger Bank, "Binnensee", Channel and Clay Deep area. Collections were made both at sea and ashore.

Moreover, 55 additional samples including 1836 herrings (at sea and taken from the market) were analysed for the following morphological characters:—

(a) Number of vertebrae, prehaemal vertebrae, rays in D., A., and left V., gill rakers from the first left gill arch, postventral keeled scales (K_2).
(b) Total length, standard length, length of head, depth of head, interorbital width, predorsal, preventral and preanal length, depth of caudal peduncle.
(c) Total weight and weight of gonads.
(d) Maturity stage and age.

Small samples of sprats and pilchards were compared with herring in respect of their gill rakers. Continuous hydrographical observations and soundings were undertaken by the German fishery protection vessels "Meerkatze" and "Frithjof". In August a member of the Institute took part in the cruise of the research vessel "Gauss" to study the occurrence of the herring in connexion with the thermocline.

Max-Planck-Institut für Meeresbiologie und Institut für Fischereibiologie der Universität Hamburg.

1. The investigations on the frequency and distribution of herring larvae were continued:—
   (a) During the cruise of the "Gauss" in March 1953 in the area between the German and Dutch coasts and the Dogger Bank.
   (b) During the cruises of "Uthörn" and "Seehund" in the winter and spring months in the east-Frisian inshore waters.
2. Experiments concerning the behaviour of small herring larvae in relation to light as well as to discontinuity layers.
3. Rearing experiments with herring fry in order to ascertain the effect of rearing temperature on the number of body metameres.
4. Investigations into allometry of growth of herring larvae, rate of ossification, and differentiation of gut. Vertebral counts.

Institut für Küsten- und Binnenfischerei, Hamburg.

The investigations on the abundance and composition of the catch of cutters engaged in the "oil-herring" fishery were continued in Cuxhaven and on board the cutters.

Publications.

Bückmann, A. und Hempel, G.: Beobachtungen über Verteilung und Entwicklungszustand der Heringslarven an der west- und ostfriesischen Küste im Frühjahr 1952. Kurze Mitt. a. d. Fischereibiol. Abt. d. Max-Planck-Instituts f. Meeresbiol., Wilhelmshaven, **2**, pp. 24—38.

— Harder, W., und Hempel, G.: Unsere Beobachtungen am Hering. Ibid. **3**, pp. 22—42:

Harder, W.: Zum Formwachstum des Herings. Zeit. Morph. u. Ökol. Tiere, 42, 209—224.

Hempel, G.: Meristische Merkmale der Frühjahrsheringe in Ems und Elbe. Kurze Mitt. a. d. Fischereibiol. Abt. d. Max-Planck-Instituts f. Meeresbiol., Wilhelmshaven, **3**, pp. 43—45.
— Die Temperaturabhängigkeit der Myomerenzahl beim Hering. Naturwiss., 40, pp. 467—8.

Netherlands

(B. Havinga).

Work on herring was continued in 1953.

To get an insight into shoaling behaviour, migration routes, and spawning places of the herring tribes of the southern North Sea, and also to trace the influence of fishing upon these tribes, samples were taken from the south-western area of the Dogger, from the Sandettié and from the Channel, as has been done in 1952. Work was started on the l_1-distribution and on the otoliths. Most of the samples were taken with the help of the research vessel "Antoni van Leeuwenhoek".

Further, work was started on analysing the factors that influence the catch of drift-netters. In connexion with this work an attempt was made to find out to what extent one can rely on the echo-sounder when fishing with a drift-net. For this purpose a trip was made to the fishing grounds in June—July with a commercial lugger. On this trip hydrographical and plankton data were also collected.

Scotland

(B. B. Parrish).

The Scottish programme of herring research followed in 1953 was again on the same general lines as that outlined in the administrative reports for 1951 and 1952.

Research vessel activities were as follows:—

January to March:—Surveys of herring populations in the Clyde estuary, and co-operation with the Scottish Marine Biological Station at Millport on the possibilities of using underwater television for surveying herring egg concentrations on the sea-bed.

April to September:—Hydrobiological and echo-sounder surveys on the grounds fished by the Fraserburgh, Peterhead and Shetland drifter fleets; the analysis of the data from these surveys is being shared with the staff of the Scottish Marine Biological Association's Oceanographic Laboratory, Edinburgh.

October to December:—Survey and tagging of herring concentrations off the west coast of Scotland.

Sampling of the herring landed at each of the main ports on the east and west coasts of Scotland and at Shetland was continued, and data from these samples are being used in the analysis of the "racial" composition of the shoals, in assessing the main population parameters and for forecasting.

Work on the use of the herring otolith as a guide to race has continued, and a number of distinctive otolith types of spring spawning herring have been recognized. The distribution of these types in the North Sea and its approaches is being studied.

Approximately 12,000 herring were tagged in 1953. As in previous years the work was done on board commercial fishing vessels, and the Scottish "one-man" toggle attachment was used with Lea and Scottish hydrostatic tags. Trials were also made with a "one-man" bridle attachment. The centres of tagging were at Shetland (988 liberations), north-east coast (6811 liberations), north-eastern North Sea (600 liberations), upper Moray Firth (476 liberations) and the west coast of Scotland (3158 liberations). A total of 113 recaptures have been recorded to date (March 1954). Experiments to test the effect of tags on the herring were started in October 1953, in the laboratory's aquarium tanks.

Sampling of the 0- and I-group herring in the coastal nursery areas has continued. The course of the migrations to the open sea is being studied from the Moray Firth nursery grounds by racial analysis and tagging. Further surveys to determine the chief nursery areas in the north and south Minch were made in 1953.

Extensive larval surveys off the east and west coasts were again made in 1953. A spawning centre not previously recorded for autumn spawning herring was located off the island of Tiree in October.

Fat analyses were continued in 1953. A study of the annual fat cycle in the main fat storage organs of autumn spawning herring from the Minch was started in February and was continued throughout the year. The feeding cycle of these herrings was also studied. Carcase fat estimations were also made on North Sea autumn spawners during the summer fishery, and samples of these fish were taken for vitamin A assay.

Herring rearing experiments were begun in the spring. The cold storage of male gametes from a spring spawning herring was untertaken in March, and these proved interfertile with eggs from autumn spawners in the North Sea in August. Experiments were also started on the effect of incubation temperature on vertebral number of autumn spawning herring. Larvae were hatched at 8.5° C., 11.5° C., and 14.5° C., but is was not found possible to rear them to the stage of vertebra formation. Myotome counts were made.

Further tests were made in 1953 with the Larsson pelagic trawl in the North Sea summer fishery. No substantial catches were made.

Experiments to test the aggregating properties of underwater lights on organisms giving rise to echo-sounder traces were continued. Large aggregations of gadoids, principally whiting, were obtained with white, blue, green and ultra-violet light. No aggregations of adult herring were obtained with the lights.

Asdic surveys of the northern North Sea and its approaches were made by the kind co-operation of H.M.S. "Welcome" in February and May. The equipment proved effective as a means of locating herring shoals in the northern North Sea.

Sweden

(Hans Höglund).

The following herring work was carried out in 1953:—

1. Tagging experiments.
   (a) In March and April exactly 2000 herrings, spring spawners as well as autumn spawners, were tagged with the Lea tag and liberated off the northern part of the Swedish west coast. Up to 1. April 1954 the recoveries amounted to 250.
   (b) In September—October, 1041 fish (mainly spents) were tagged and released in the southern part of the Fladen Ground area, and in the vicinity of the Dogger Bank. Out of these 29 have been recaptured by 1. April 1954.
2. Some 40 herring samples comprising about 4000 fish from the Skagerak and the North Sea have been examined in the usual manner.
3. Collaterally with the tagging work in the northern Bohuslän, studies were made on the spring spawning herring before, during, and after spawning. Hydrographic observations and plankton hauls were taken regularly, and continuous samples from the herring catches were analysed.

   A tentative experiment with artificial fertilization and rearing of herring offspring was made in the spring of 1953.
4. Herring investigations were also made in the Baltic and will be accounted for in the Baltic Committee.

Salmon and Trout Committee.

1953

By Arthur E. J. Went

Denmark

(Knud Larsen).

Biological Investigations.

Biological investigations carried on during 1953 were as follows:—

(a) Tagging and marking experiments. In 17 localities approximately 800 adult sea trout were tagged. In addition 9,346 1—2 years old brown trout from trout farms were tagged with celluloid tags or marked by fin-cutting and liberated into brackish waters. In streams on the Faroes 106 adult sea trout were tagged.

(b) Stock analysis. By means of electric fishing trout were obtained from two streams in Denmark and in the Faroes. The results from earlier population analyses of the stocks of trout streams have been incorporated in a paper now in the press.

(c) Sea trout runs. Investigations as to the composition by age, sex, etc. have been carried out in a number of streams in Jutland, in south Seeland and on the Faroe islands.

(d) The food of the sea trout in the sea. Further collections have been made.

(e) The biology of the grayling, pike and burbot in trout streams. Investigations have been carried on but are not quite completed.

(f) Salmon investigations in the Baltic. Sampling of scales and the taking of length measurements from Baltic salmon have been continued as in previous years. A paper on the Danish salmon fishery in the Baltic is nearly completed.

England and Wales

(F. T. K. Pentelow).

Salmon Tagging. The investigations of the movements of salmon in the Irish Sea by J. S. Alabaster were continued for a further year at Caernarvon, North Wales. Salmon were obtained from commercial fishermen fishing with drift-nets in the Menai Straits between Bellan Point and Caernarvon. Between 1. July and 29. August, 72 fish were caught and tagged alternately with two types of tag; 37 received the Scottish "D" type silver tag and 35 the Einar Lea hydrostatic tag. So far there have been 7 recaptures, 2 with "D" type tags and 5 with the Lea type. All the fish were caught again locally either in the River Gwyrfai, four to five miles west of the tagging station, or in the River Seiont and the Menai Straits to the east. No fish had travelled more than six miles.

A sea trout which was tagged in the Menai Straits at Bellan Point on the 28. July 1952, was recaptured near the mouth of the River Seiont on the 3. August 1953, about a mile away.

Kelt and Smolt Tagging. During 1953 further investigations by A. Swain and W. G. Hartley were carried out in the study of the migratory habits of salmon and sea trout, and for the third consecutive year fish were tagged in the River Coquet at Warkworth, Northhumberland. Fish descending the river were caught by means of a wooden trap fitted into the pass around Warkworth Dam. Between 8. March and 19. May, fish were tagged every day except on 28. April when the river was in flood. By 8. April only a few smolts had migrated but large numbers of sea

trout kelts had been tagged. During the remainder of the month and for the first fortnight in May, both sea trout and salmon smolts migrated steadily. Altogether 5,671 sea trout smolts, 872 sea trout kelts, 3,497 salmon smolts and 15 salmon kelts were tagged. Small serially numbered plastic tags were used for the young fish and the Einar Lea hydrostatic tags for the kelts. Whenever possible, the lengths of the tagged smolts were recorded but scale samples were only taken from every tenth fish. The lengths of all the kelts were measured and a few scales were removed from each fish. Of the 2,267 sea trout smolts measured, the smallest was 13 cm. in length and the largest 31 cm. but the bulk of the fish came within the 15—19 cm. range. 843 salmon smolts were similarly measured, the smallest being 11 cm. and the largest 20 cm. About 65 % of the salmon smolts were between 13 and 15 cm. in length. During the summer, only six of the sea trout smolts were recaptured. Five of these were caught by a seine netsman in the Hemsby area of the Norfolk coast, and one was taken in deeper water off the Dutch coast. 76 sea trout kelts, representing 8.7 % of the number tagged, were recaptured. Of these, 55 were taken in drift-nets off the Northumberland coast and 4 off the Yorkshire coast, two were caught near Hemsby, two others by trawlers in the open North Sea, and another east of Texel off the Dutch coast. In addition to these sea recaptures, 11 were taken in the parent river and one in the River Tweed.

Throughout the season, further recaptures were made of fish tagged in previous years. These included 11 adult sea trout tagged as smolts in 1951. Two were caught off the north-east coast and the remainder were taken as kelts in the River Coquet at Warkworth. Up to date, 2.1 % of the sea trout smolts tagged in 1951 have been recaptured. Of the sea trout smolts tagged in 1952, 32 were recaptured as adult fish this year. Fifteen were netted off the north-east coast and three off the Norfolk coast, three were taken in a spent condition at Warkworth Dam and a further ten were recovered from the Coquet during the summer; two others were caught in the River Tweed. These figures bring the total percentage recaptures of sea trout smolts tagged in 1952 to 1.2. Ten of the sea trout kelts which were tagged at Warkworth in 1952 were caught once again as spent fish in the River Coquet during April. 12.3 % of that year's kelts have now been recaptured. No salmon smolts were tagged in 1951, but in the following year a proportion of the run was trapped and tagged. Eleven of these fish were caught as grilse during July and August this year. One was taken on a rod at Guyzance, which is a few miles upstream from Warkworth, and another was netted in the tidal waters of the River Tweed at Yardford. The remainder were caught in the sea, seven by drift-nets off the Northumberland coast, one at Whitby, and one off the Norwegian coast about 40 miles north of Bergen. The staff of the Scottish Home Department continue to collaborate by carrying out similar investigations in the Tweed.

Salmon caught in the Open Sea. Three salmon were caught in the open sea in the Fastnet area, south of Ireland: The first caught on the 14. February was a fish of one year's smolt age and three sea winters; the second, caught on 27. February, had been a two-year-old smolt, had three winters in the sea and had begun to grow again; and the third, caught on the 11. April, had been two years in the river and two winters in the sea.

Finland

(E. Siltamaa).

The following numbers (in 1,000) of salmon fry were liberated into Finnish waters in 1953:—

Rivers			Coast
Oulu	Kemi	Kokemäki	of Bothnian Bay
202.0	476.0	67.4	19.0

France

(R. Vibert).

Recherches Physiologiques et Biologiques.

Les recherches entreprises sont poursuivies. Les travaux de marquage de smolts commencés en 1951 et 1952 ont été poursuivis en 1953. Quatre saumons de deux ans de mer, marqués en 1951, ont été repris dans leur rivière natale en 1953.

Propagation Artificielle du Saumon.

400,000 oeufs récoltés en Décembre 1953 ont été employés en majeure partie à des essais de réacclimatation du saumon dans des affluents de la Loire et dans l'Orne en Bretagne. En 1952, 25,000 oeufs avaient été envoyés des Pyrénées en Normandie, par chemin de fer (1,100 km.), sitôt après la fécondation (green eggs), en boîtes Vibert (gravel hatching boxes), puis placés avec les boîtes dans les graviers de la rivière l'Orne. La mortalité en boîtes *complètement pleines* ne dépassa pas 7 % au stade de l'embryonnement et 20 % au stade de l'éclosion. Dans deux boîtes témoins à moitié pleines la mortalité a atteint rapidement 100 %. Cet essai d'expédition d'oeufs de saumon à grande distance, le jour même de la fécondation, fut repris en Décembre 1953; 50,000 oeufs furent à nouveau expédiés dans la rivière l'Orne en Normandie. En Février 1954 le contrôle effectué quelques jours avant l'éclosion permit de constater que la mortalité totale ne dépassait pas 5 % environ.

Prises de Saumons.

Excellente campagne en 1953 pour le Bassin de l'Adour (100 tonnes).

Germany

(R. Kändler).

In the breeding season 1952/53 106,000 eggs of sea trout were hatched in a hatchery in Schleswig-Hol-

stein. The fry were liberated into three small rivers flowing into the Schlei and the north-western part of the Kiel Bay, where the parent fish had been caught. In 1953/54 the number of eggs hatched rose to 200,000.

Statistical data of the landings of the salmon taken with drift-lines fished by fishermen from Schleswig-Holstein in the south-eastern parts of the Baltic were collected. Attention was paid to the size composition of the landings, and a number of sets of scales have been taken.

Iceland

(Þór Gudjónsson).

Scale samples of salmon and trout were collected for age analysis and growth studies as in previous years. Marking of smolts and tagging of kelts were continued. In the river Úlfarsá 593 salmon smolts were marked by cutting the adipose and the left ventral fins and 41 sea trout smolts were marked the same way. Due to unfavourable weather conditions, only 70 kelts from the river Elliðaár were tagged. The hydrostatic tag was used. Work on the population of Lake Meðalfellsvatn, which was started two years ago, was continued.

Hatchery operations were carried out at four centres mainly with salmon ova. A new rearing station built on the River Elliðaár has been in operation since June. One-summer-old salmon parr were liberated into several rivers from this station as well as from another rearing station, which was mentioned in the last report. The salmon catch was below average.

Ireland

(Arthur E. J. Went).

Biological Investigations.

During 1953 investigations were continued on the salmon of the River Shannon. Tagging of clean salmon in the sea at Rath, Co. Kerry, was continued for the fourth year in succession by Mr. E. D. Toner. The results from this station were similar to those of the two previous years and recaptures were made around the Irish coasts from Bantry Bay to the River Fergus, a tidal tributary of the River Shannon. A paper giving the results was in course of preparation at the close of the period under review. Salmon captured by drift-nets off the County Donegal coast (north-west of Ireland) were tagged, and recaptures were made in the main south of the tagging station.

As in previous years, salmon tagging was carried on along the coast of County Antrim in collaboration with the Ministry of Commerce, Belfast Stations situated at both sides of, and close to, the mouth of the River Bush were used. Recaptures were made almost equally inside and outside the River Bush system.

Tagging of salmon smolts in the Blackwater, Erne and Shannon was carried out in the spring of 1953, and a single fish tagged in a preliminary investigation in the previous year in the Blackwater was recaptured in the tidal waters of the Bandon River, some distance to the west. Tagging of kelts was continued at as many hatcheries as possible during the year. Two programmes of research on the removal of coarse fish from trout waters and the addition of nutrients to certain acid lakes, was continued during the year by Dr. A. Healy and Miss E. Twomey.

Returns of Catches.

Returns of catches are demanded annually from every holder of a licence to fish for salmon and sea trout. The turns for 1953 are now being compiled and will be available later in the year. The figures for 1953 which are now available, indicate that the catch of that year was approximately 1,000,000 kg. or about 25 % reduction on that of 1951 (a similar catch was made in 1950). As mentioned in previous reports, the export figures give a reasonably good idea of the abundance of salmon. In 1953 exports amounted to 840,000 kg., compared with approximately 900,000 in 1952. During 1953 runs of salmon were generally not more than average until April and the summer fish were considerably delayed in their appearance. Grilse were generally much later than usual and catches in the month of July in many areas were better than in June for the foregoing reason.

Artificial Propagation of Salmon and Trout.

During the season conditions for the artificial propagation of fish were suitable and, as a result, the output of ova, particularly brown trout, was well up to average in most hatcheries. In 1952, owing to adverse conditions, the output of brown trout ova was very small, but during 1953 the output was restored to its former level, or possibly somewhat higher. Supplies of ova were again imported from Great Britain.

Norway

(Leiv Rosseland).

River Control.

As in previous years, work in Norway has consisted mainly in tagging of fish, sampling of stomach contents and sexual organs of salmon and control of upstream and downstream migrants in three rivers, namely, the Sandvikselv, Istra and Oselv.

In the Sandvikselv high water level in the spring greatly reduced the control of smolts. Just at the time of the most intensive smolt migration the fence had to be removed in order to avoid the risk of killing smolts. The upstream migrating adult fish were counted in the salmon pass at Frantzefoss from 8. July to end of October. During that period 2,699 sea trout, (1,563 and 1,136) and 67 salmon (20 and 47) entered the trap. In the middle of September 12,000 salmon fingerlings were released, mainly in the upper part of the river, which cannot be reached by spawning fish. Four thousand of these were marked by removal of the adipose fin. In the autumn a severe pollution killed all the fish in the tidal zone and the lowest 200 yards

of the river. This season a grilse tagged as smolt in the Sandvikselv river 1952, was recaptured at the west coast of Norway, near Bergen.

The Istra river was flooded several times during the season, and finally the weir was damaged beyond repair. We now consider this river as suitable for counting purposes and it is not intended to rebuild it.

The water level in the Os river has also, in some periods, been so high that control was not complete. A new and more effective weir is planned and will be built as soon as conditions in the river permit. This year only 285 sea trout and 37 salmon were counted and tagged.

In the Laerdal river 77 salmon and 40 sea trout kelts were tagged in the last half of April. Of these 5 salmon and 5 sea trout were recaptured after rather short migrations in the sea, whilst 2 salmon and 2 sea trout were recaptured in the river. This season 2 sea trout tagged in 1950, 3 sea trout and one salmon tagged in 1951 and 4 salmon tagged in 1952 were recaptured.

Tagging of Clean Salmon in the Sea.

Coastal Stations. At the Kinn station, near Florø, 73 salmon were tagged and to date 37 (50.7 %) have been recaptured. One fish was recaptured in the river Spey in Scotland, the others were recaptured in Norway. At the Titran station, near the mouth of the Trondheimfiord, 80 salmon were tagged, and so far 42 (52.5 %) have been recaptured. One recapture was from the river Breamish in England, a tributary of the river Tweed, and the others were from Norway. At the Bjørøyvaer station, near the mouth of the Namsenfiord, 185 salmon were tagged, and so far 94 (50.8 %) have been recaptured, all of them in Norway. Altogether 338 salmon were tagged at the coastal stations and 174 (51.5 %) were recaptured.

Fjord Stations. At the Os station, situated near the mouth of the Os river, near Bergen, 14 salmon were tagged, and to date only three have been recaptured, one in the Os river, one at the marking station itself and one in the sea near the marking station. At the Erdal station, situated near the mouth of the Laerdal river, 28 salmon and 8 sea trout were tagged. Of the four salmon recaptured, three were taken in the Laerdal river and one was taken three km. from the mouth of this river. At the two fjord stations, 42 salmon were tagged of which 7 (16.7 %) have been recaptured.

Late in the autumn 318 sea trout and 150 salmon, stripped in hatcheries in the southern part of Norway, were tagged and released. None of these have been recaptured so far.

Scotland

(See page 44.)

Spain

(J. Cuesta).

Protection of Spanish salmon rivers was continued during 1953.

The scales of the salmon caught (which were much more numerous than during 1952) have been studied. The mean weight of the fish was, however, less as can be seen from the following figures:—

River	1952		1953	
	Number caught	Mean weight in kg.	Number caught	Mean weight in kg.
Ason	220	5.5	798	4.7
Pas[1])	—	—	32	—
Nansa[2])	170	5.7	95	5.3
Deva-Cares ...	920	5.4	1,285	5.3

Artificial propagation of salmon and trout was carried out by the Infiesto Piscifactory in Asturias (Servicio Nacional de Pesca Fluvial) as follows:—

Period	Trout eggs	Salmon eggs
1952—53	152,000	440,000
1953—54	152,000	535,000

Sweden

(Jöran Hult).

The work was continued along lines of previous years and most of the investigations have been carried out by the Migratory Fish Committee, in cooperation with the Board of Fisheries and Fishery Research. Twenty-five reports concerning salmon (in Swedish) have been laid before the Migratory Fish Committee. The Hölle Salmon Laboratory has been completed and is equipped with a stream aquarium with a natural river bottom and a water flow of 2—3 m³./sec. In this aquarium it is possible to make experiments concerning the habits of the salmon during its freshwater life and also how these are influenced by changes in water flow, stream velocity, etc.

Experiments on smolt rearing have been continued, but new difficulties have arisen. A disease, caused by supersaturation of the water with air, has been identified. This supersaturation resulted from the use of the warm cooling-water from the power-houses (vide: Rapp. et Proc.-Verb., 135, II, p. 29). Measures have been taken to deal with this problem in the future. Work on different diets has been continued.

Transport of salmon past power-houses on different rivers has been continued with good results.

The marking and tagging of the reared smolts is an important part of the work as it is the only way to get information about the different methods for rearing and planting smolts. During 1953, 24,000 smolts were tagged (see table on top of next page).

In addition 9,538 smolts from the River Indalsälven have been tagged with internal tags. Of these 5,300 were included in an experiment on the passage of smolts through turbines. Half that number were

[1]) Prohibition of the capture of salmon in the greater part of the Pas River has continued.

[2]) The reduction in catch in the Nansa River is doubtless due to the obstructions resulting from hydro-electric development of the river.

Tagging of Smolts in 1953.

East coast		West coast	
River Ångermans-älven	7,702	River Lagan	5,325
The coast off Ångermansälven.....	1,958	— Åtran	637
River Indalsälven .	6,789	— Örekils-älven	884
The coast off Indalsälven	712		6,846
	17,161		

passed through the Holle power-house turbines and 2,650 were planted below the power-house. The remainder was used to obtain a comparison between external and internal tags.

Several captures of salmon tagged in previous years have been made, but at least in the Baltic most of the tagged smolts have not yet reached catchable size.

Clean salmon and kelts numbering 1,321 from the Bothnian coast and 7 rivers have been tagged. The collection and study of salmon scales, both from rivers and the sea has been continued.

A paper on the results of the Swedish salmon research was laid before the Baltic Committee at Copenhagen in October 1953 by Dr. G. Alm and the Committee's recommendations were accepted by the Council. No agreements on this basis have yet been reached at the conferences which have been called under Swedish auspices.

Publications.

Fontaine, M., J. Leloup et M. Olivereau: "De la nécessité de l'emploi des techniques convergentes pour l'étude de la fonction thyroïdienne chez les poissons." Congr. Intern. Physiol. de Montréal 1953, pp. 356—57.

Guðjónsson, Þór, 1953: "Laxamerkingar 1947—1951." (Marking of Salmon in Iceland 1947—1951). Náttúrufræðingurinn, **23**, pp. 178—187.

Healy, Ann, 1953: "Trout in Lough Rea, Co. Galway." Sci. Proc. R. Dublin Soc., **26** (N.S.), 9.

Larsen, Knud (1953): "8 maveprøver af smålaks fra det nordlige Kattegat." (With a summary in English: 8 samples of stomach contents from small salmon,caught in the Northern Kattegat). Sportsfiskeren, No. 9.

Vibert, R.: "Migrations maritimes de saumons." Bull. Sté. Zool., **77**, 5—6, pp. 313—317.

— "Voyages maritimes des saumons et retour à la rivière natale." Bull. Français de Pisc., 170, pp. 5—23.

Went, Arthur E. J., 1953: "Salmon movements around Ireland. III. From Carnlough, Co. Antrim (1950 and 1951)". Proc. Roy. Irish Acad., **55**, B, II.

— and F. A. Gibson, 1953: "Salmon movements around Ireland. IV. From Streedagh, Co. Sligo (1951 and 1952)." Ibid., **56**, B, I.

— and K. U. Vickers, 1953: "Salmon movements around Ireland. V. From North County Antrim (1951 and 1952)." Ibid., **56**, B, II.

Shellfish Committee.

1953

By B. Havinga

CRUSTACEA

Belgium

(E. Leloup).

Biological and Statistical Study of the Shrimp *(Crangon vulgaris).*

The biological study of the shrimp was continued. Its aim is to obtain information on the annual cycle of the stock of shrimps on the Belgian coast.

The following data were collected:—

(a) The total quantity of shrimps caught.
(b) The number of shrimps with or without eggs.
(c) The length distribution of a 1 kg. sample of raw shrimps.
(d) The length distribution of a 1 kg. sample of commercial shrimps.
(e) Information on the commercial and non-commercial quantities of shrimps caught.
(f) Analysis of the stomach contents of certain species of fish caught with the shrimp trawl.

Study on *Nephrops norvegicus*.

At the request of the Chairman of the Shellfish Committee investigations were started on *Nephrops norvegicus*.

Biometrical measurements were carried out on *Nephrops*, landed at the fish market of Ostend from Iceland and the North Sea.

Denmark

(E. Ursin).

Danish Waters Proper.

Deep Sea Prawn *(Pandalus borealis)* and **Norwegian Lobster** *(Nephrops norvegicus)*. Continued analysis of the stock in the Skagerak. The area was investigated three times during 1953.

Greenland Waters.

Deep Sea Prawn. The size composition of the stock and the catch per-unit-of-effort is now controlled by regular investigations all the year round in the districts of Julianehåb and Godthåb Fjord. The investigations are closely connected with continuous hydrographical and plankton observations. In addition the stock of the Disko Bay region was investigated during the summer.

England

(H. A. Cole).

Detailed comparisons were made of the fishing power of a variety of pots used for the capture of *Leander serratus*. A population of about 1,500 prawns was maintained in a large concrete tank and fishing was continued over 4 months. Aspects of fishing power investigated include: nature of bait; times of hauls; intervals between hauls; size; placing and number of apertures and the effect of the presence of shore crabs on the catch.

A report is nearly ready on growth, sex-change and breeding on *Pandalus montagui*. The factors controlling migrations are under investigation.

Finland

(S. Segerstråle).

An investigation into the life history of *Leander adspersus* Fabricii by K. Lydecken was brought to an end.

France

(P. Desbrosses).

Une étude sur la **crevette grise** *(Crangon vulgaris)* des côtes de Charente-Maritime est en cours: elle porte sur la croissance, l'époque de ponte, la taille minima des femelles oeuvées.

Germany

(P. F. Meyer-Waarden).

Crangon vulgaris. Intensive work has been done by the "Institut für Meereskunde der Universität Kiel" to investigate the hydrographic, biological and economic basis for the shrimp fishing off Büsum. The importance of life cycle of the North Sea shrimp has been especially examined (distinctive mark of the sexes, moulting, copulation, growth of male and female, migration). The influence of tide, current, wind, and water temperature on the catch, the causes of the yearly fluctuations and the profitableness of the fishing have been studied.

Preservation Methods. Investigations on the rapid perishability of crab meat showed that on boiling aboard ship temperatures exceeding 80° C., in the body of the crab, have been attained only for a short period (approximately 8 minutes). The boiling is not sufficient to stop the development of decomposition in the crab body. This rate of decomposition can be lowered by addition of certain salts of heavy metals.

Netherlands

(B. Havinga).

Statistical investigations on the catch of shrimps (*Crangon vulgaris*) per-unit-effort were continued.

Norway

(B. Rasmussen).

Norwegian investigations on shellfish are reported in the Transition Area.

Scotland

(H. J. Thomas).

Survey of Lobster and Crab Fishery. The comprehensive survey of the lobster fishery in Scotland initiated in 1951 has been completed. In addition, data concerning the size distribution and composition of the lobster stocks, with particular regard to the effect of the increase in the minimum legal landing size, have been continued.

Lobster Tagging. Final returns of previous tagging experiments carried out on the south-east coast of Scotland and off the west coast have been analysed together with the current results of the 1953 tagging experiment in a comparison of the respective fishing mortalities. In the latest experiment 1,000 lobsters were released at 200 stations covering the Orkney lobster fishing grounds.

Physiology. Experiments in the oxygen uptake were continued and a paper entitled, "The Oxygen Uptake of the Lobster, *Homarus vulgaris*" has been accepted for publication in the *Journal of Experimental Biology*.

Nephrops norvegicus. Data concerning the landings of this shellfish in Scotland have been compiled and previous research ship data in respect of both adult and larvae have been analysed in regard to size distribution, sex ratio and the level of escape through a 70 mm. trawl-net. A paper incorporating these results is being published in the Marine Research Scotland series.

MOLLUSCA

Belgium

(E. Leloup).

Investigations on the presence of *Mytilicola intestinalis* in mussels living on the Belgian coast from Knocke to La Panne were continued. These observations were carried out during the months of April, June and September.

Denmark

(E. Ursin).

Oyster *(Ostrea edulis)*. Control of the catch in the Limfjord. In the Waddensea a series of hauls were carried out in such localities where oysters were previously known to occur. Empty shells, obviously of high age, were numerous while living specimens and fresh shells were lacking, even on the southernmost banks south of Jordsand.

Mussel *(Mytilus edulis)*. Samples of Waddensea mussels were measured three times in 1953 (June, August and October). About 1,000 specimens were examined for *Mytilicola*, which was not observed.

Queen *(Chlamys opercularis)*. Investigations of the growth and occurrence of this species in Danish waters were intensified. The queen, which previously had no commercial value, is now fished in the southern Kattegat, although in small quantities only.

England

(H. A. Cole).

Oyster Research.

Work was continued at Burnham-on-Crouch on the factors controlling the breeding and setting of oyster in the rivers Crouch and Roach. The spatfall was again poor, the production of larvae being reduced, probably by the bad conditions resulting from the serious floods occurring at the end of January, 1953.

Nanoplankton flagellates were rather scarce when larvae were most abundant and were insufficient to promote rapid growth and settlement.

Enrichment of the water of the upper Crouch with superphosphate at the end of June produced a significant rise in the level of nanoplankton flagellates and further trials are contemplated.

There was a further increase in the settlement of *Elminius* in Essex. Experiments with D. D. T. emulsion, sprayed onto egg-box collectors, gave satisfactory control of barnacles and the sprayed collectors yielded rather more than twice as many oyster spat as those not sprayed.

The breeding of *Crepidula* was investigated at a number of points on the east and south coasts and substantial differences in the length of the breeding season and the intensity of breeding were found.

Exact evidence was obtained regarding the extent of the destruction of oyster spat by *Urosalpinx*. On two beds in the river Crouch more than 60 % of the year's crop of spat was destroyed during the first 6 months after setting, in addition to substantial quantities of older oysters.

The feeding habits of starfish, *Asterias rubens*, in Essex were studied and also their control by the use of quicklime.

At Conway a fair spat of oysters was obtained in the breeding tanks and further improvements were made in the technique of rearing oysters in laboratory vessels. Larvae were obtained early in the season by maintaining breeding oysters in heated tanks. The principal conditions investigated in the experiments were the effects of density of food organisms and salinity.

On our Menai Straits oyster ground, comparisons were made of growth-rate at various levels of exposure on the shore. It was found that oysters continually submerged in a shallow pit, excavated at low water of neap tides, grew as well as those laid at low water of spring tides.

Mussel Investigations.

Substantial progress has been made in devising possible measures to combat the damage to mussels by *Mytilicola*. As a result of field surveys of infested areas it was concluded that mussels raised from the bottom, or situated in rapidly moving water, remained relatively free of infection and in good condition. The parasite appears to have an optimum salinity range with heavier infestations in the middle region of an estuary than towards its inland or seaward ends.

In field experiments with uninfected mussels transferred to areas of heavy parasite infestation, those mussels raised from the bottom on rafts, stakes or fences did not become heavily infected, grew well, and were in good condition and fully marketable.

Mytilicola has again been found occurring naturally in oysters and artificial infections have been obtained in the laboratory of oysters, cockles, slipper limpets and *Paphia pullastra*.

Escallops. A sledge dredge for escallops has been developed and gave very promising results in comparison with standard gear.

Underwater observation of the action of a normal dredge on Irish escallop beds (in co-operation with the Department of Fisheries of the Republic of Ireland) has shown that dredge selection is partly responsible for the very small number of young escallops taken during normal working.

Cockles. Employing the quantitative methods developed last year, detailed surveys were made of the large beds in the Burry Inlet, South Wales. Despite an average density in April 1953 of 1,777 per square metre, in the areas examined, it was concluded that the stock showed signs of very intense exploitation and in consequence the minimum size limit for gathering has been raised slightly. The fishery is based almost entirely on those cockles rising two years old.

A further survey has been made in Morecambe Bay where severe damage by oyster-catchers had been reported.

Marine Nanoplankton Systematics. Work has been resumed on the marine nanoplankton. A large number of cultures held at Conway and Burnham have been examined and fresh isolations were made from the estuaries in Essex, throughout the summer and autumn. The material obtained is being described and a limited study of the ecology of those forms likely to be important as food for marine larvae is in progress.

Shellfish Purification. Simple techniques have been devised for the purification of mussels and oysters which do not require initial chlorination of the sea

water used. Their capital and running costs are low but they are fully suitable for commercial exploitation. A plant to cleanse mussels, employing the new technique, has been built by the fishermen of a south coast port and is working satisfactorily.

Annex.

Sertularia cupressina—white weed. This hydroid is being processed and sold for interior decoration. A limited investigation is being made of its growth-rate and season of breeding. Attempts are being made to devise catching gear which is more effective and less wasteful than that now employed.

France

(P. Desbrosses).

Ostréiculture.

La reproduction d'*Ostrea edulis* et de *Gryphaea angulata* a été suivie régulièrement dans les centres ostréicoles les plus importants, comme chaque année. Ainsi, dans la région de Marennes—La Tremblade, 175 pêches de plancton ont permis d'annoncer aux professionels les émissions importantes de naissain; il en a été de même dans le bassin d'Arcachon ou plus de 300 récoltes de plancton ont été pratiquées. Du naissain d'huîtres plates a été récolté pour la première fois sur les collecteurs placés dans des claires de la région de Marennes.

Des essais de collecteurs en nid d'abeille ont été poursuivis sur une grande échelle avec succès; l'épandage d'engrais a été continué sur les claires expérimentales.

Diverses études ont été entreprises sur la nourriture, le verdissement, la biométrie des huîtres, la destruction des *Polydoras* et des ennemis des huîtres.

Mytiliculture.

La croissance des moules du Boulonnais et de la baie de l'Aiguillon est à l'étude. L'augmentation du pourcentage des moules parasitées par *Mytilicola* a été constatée dans l'estuaire de la Vilaine, tandis que plus au sud, l'estuaire de la Loire est toujours indemne du parasite.

Autres Lamellibranches.

La prospection des bancs de *Pecten maximus* a été poursuivie chaque mois en rade de Brest. La croissance et la maturité sexuelle de *Chlamys opercularis* ont été étudiées dans la région du Boulonnais. Les *Chlamys varia* marqués en 1952 dans la région de La Rochelle ont été repris dans la proportion de 16 %. L'étude biométrique des *Venus mercenaria* importé des États-Unis a été continuée. La lutte contre les tarets (*Teredo* sp.) a été poursuivie à l'aide de divers produits.

Germany

(P. F. Meyer-Waarden).

Mytilicola intestinalis. The permanent mussel investigations have continued to investigate the attack on mussel beds by *Mytilicola intestinalis* on the German coast. No decrease in the infestation in the area between Ems and Elbe, which is almost 100 % infested was noted. But there was no spreading of the attack to the mussel beds north of the Elbe, which have been so far free from parasites. A trip to Italy to study the mussel industry gave some idea of the ecological conditions that lead to the attack by parasites.

To get a comparable factor for the quality of individual mussel beds, mussels of various origin were measured for length, height, curvature, and volume. These measurements were carried out with mussels of German and Italian origin.

Mya arenaria. In the Waddensea in the northern estuary of the Elbe 6 larger beds of *Mya arenaria* have been studied with respect to their composition and their relation to the bottom conditions.

Elminius modestus. In August 1953 the barnacle *Elminius modestus* Darwin, which so far was unknown on the German coast, was observed for the first time in the estuary of the Elbe. It is to be supposed that it has been carried there by ships.

Teredo. A series of protective varnishes have been tried for antifouling and for combating *Teredo*. For these investigations floating timber with experimental poles were laid out in the most important sea ports of the German coast and also near Chioggia in the lagoon of Venice (Italy). In this connexion investigations have been made on the area of settlement by the Cypris larvae of *Balanus improvisus* Darw.

Ireland

(F. A. Gibson).

Pecten maximus. During the year under review further work was done on the escallop (*Pecten maximus* L.) beds of Bere Island Sound, between Bere Island and the mainland in Bantry Bay, Co. Cork. Monthly samples for age, growth, and development were collected throughout the year, and tagging of suitable individuals was carried out at the same intervals.

Nine hundred and ten escallops have been tagged since April 1952, and up to the end of January 1954, 230 (25 %) recaptures have been recorded.

In September 1953, in conjunction with Mr. R. H. Baird of the Fisheries Experiment Station, Conway, North Wales, these beds were sampled by diving. A report of this latter part of the work is at present in press. Similar samples of escallops from Galway (west of Ireland) beds were also obtained intermittently during the winter of 1952 and spring of 1953.

Oysters. The planted oyster beds of a confined portion of Clew Bay, Co. Galway, were kept under observation during the year.

Netherlands

(P. Korringa).

Oysters.

Spatfall predictions based on lunar periodicity and on plankton observations have been carried out throughout the summer season. The bulletins have

also been broadcast by radio. The intensity of setting has been measured in the usual way.

Attention has been paid to the poor condition and high mortality among the oysters of any age early in 1953. Prolonged low temperatures, infestation with *Hexamita* and an abnormally high silt content of the water—a consequence of the disastrous floods of 1. February—are considered as the causative factors. On many plots mortality has been as high as 40 to 50 %. The 1952 spat on musselshells disappeared almost completely and the spat on tiles by about 30 to 40 %. Even the *Ascidiella* and *Crepidula* on the tiles fell victim to the unfavourable conditions. Mortality was lower on plots exposed at low tide, where the infestation with *Hexamita* has been light.

Shell disease stayed away in 1953, but the quality of the marketable oysters has given reason for concern in the autumn of 1953. An increase in the stock of oysters led to similar complaints in the past. Investigations into the seasonal and annual fluctuations of the phytoplankton production in the Oosterschelde have been started. Attention will be paid to the influence of tidal currents, of discharge of river water, of the type of bottom, of the density of the shellfish population, and of variations in the amount of total phosphorus.

Mussels.

It has again been necessary to follow *Mytilicola*'s activities in both the Dutch Waddensea and in the Zealand waters. No changes worth mentioning have been recorded in the Waddensea. Its western part, where mussels are now cultivated on a very large scale, is still completely free of *Mytilicola*. In Zealand 1953 has been a failure comparable to 1950. As many *Mytilicola* hibernated in the mussel's intestines as juveniles there was no general decline in the parasite's population in early summer. Thus the mussels did not get a chance to recover, grow and fatten. The parasite became so numerous in summer and autumn, that the majority of the lots of mussels failed to grow, developed meats of a quality too poor for marketing, and showed later in the year an alarming mortality.

Publications.

Baird, R. H. and Gibson, F. A.: "Differences between dive and dredge samples from Irish escallop beds." Proc. Roy. Dub. Soc. 1953.

Degkwitz, E., Bramstedt, F., and Mann, H.: "Untersuchungen über die Ursachen der schnellen Verderblichkeit des Krabbenfleisches." Arch. f. Fischereiwiss. **5**, 1/2. 1954.

Kühl, H.: "Studien über die Klaffmuschel *Mya arenaria*." Arch. f. Fischereiwiss., 1952/53.

— "Über das Aufsuchen des Siedelplatzes durch die Cyprislarven von *Balanus improvisus* Darw." Verhd. Deutsch. Zool. Gesellsch., Freiburg 1952.

Thomas, H. J.: "The efficiency of fishing methods employed in the capture of lobsters." Journ. Cons. Internat. Explor. Mer, **18**, 3, 1953.

Tieuws, K.: "Die biologischen Grundlagen der Büsumer Garnelenfischerei." Ber. Dtsch. Wiss. Komm. Meeresforsch., **13**, 3.

— "Einfluss der Gezeiten und der Wassertemperatur auf die Garnelenfischerei." Ibid., **13**, 3.

Hydrographical Committee.

1953

By H. U. Sverdrup

Belgium

(E. Leloup).

1. Observations from the light ship "West-Hinder":—
   (a) a water sample every three days for the determination of the surface temperature, Cl, salinity and alkalinity;
   (b) once a week, a water sample for complete chemical analysis, Cl, salinity, alkalinity, silicates, phosphates, nitrates, calcium and magnesium;
   (c) continuous current measurements with the "Carruthers Vertical Log Current Meter".
2. Observations from the school-ship "Commandant Fourcault":—

   Line Gravelines—Deal (Stations B 13, 14, 15 and 16) and Belgian coast (Station B 22, off Nieuport) once a month from July till November,
   (a) a water sample at the surface (1 m.), at the bottom as well as at 20 and 40 m. according to the depth (temperature, Cl, salinity and alkalinity);
   (b) a water sample at 20 m. at each station for complete chemical analysis (Cl, salinity, alkalinity, silicates, phosphates, nitrates, calcium and magnesium).

3. Observations from the fishery R.V. "Hinders":—
   (a) regularly, when the "Hinders" put to sea on experimental fishing, water samples were taken at the surface on different points of the Belgian coast;
   (b) during the two cruises (27/31. January and 8/10. December) organized for the herring tagging experiments, water samples were taken on the spent-herring grounds.

The results of the analyses of the water samples are communicated, as regularly as possible, to the Hydrographer of I. C. E. S. at Copenhagen, for publication in the *Synoptic Hydrographic Charts* and the *Bulletin Hydrographique* issued by the Council.

Denmark

(Helge Thomsen).

Cruises. From the "Biologen" observations of t° and S $^0/_{00}$ were made in the Transition Area in March—May, July—August and October—December. In the Baltic near Bornholm observations of t, s and O_2 were carried out in September.

The investigations in the North Sea were concentrated on the Bløden Ground—Dogger Bank area. Three ships obtained hydrographical observations in all the months of the year except June and September. The sections R and S were worked by the "Dana" at the end of April, and part of section R was repeated in May and August.

In conjunction with the herring investigations hydrographical investigations were carried out in the area north of the Faroes by the "Dana" and the Fishery Patrol Ship "Thetis" in May, June, August, September and December.

At the end of June the "Dana" worked a section along Lat. 62° N. from the Faroes to East Greenland, and from Cape Farewell towards Labrador. In July and the first part of August hydrographical investigations were carried out in Davis Strait and on the West Greenland fishing banks.

Observations from Liners. Surface samples were collected from liners on the routes Lindesnes—Greenland, Lindesnes—Iceland, and Esbjerg—Grimsby/London.

Observations from Lightvessels and Coastal Stations. Regular hydrographic observations have been made by the Danish Meteorological Institute as follows:—
(a) daily observations of temperature and salinity from 12 lightvessels and 17 coastal stations;
(b) 4-hourly estimations of the surface current from 12 lightvessels;
(c) occasional observations of t, s and O_2 in the Bornholm Deep off Christiansø.

England

(J. R. Lumby).

Fisheries Laboratory, Lowestoft.

Hydrographic surveys of the whole of the Irish Sea, including the region off the southern entrance, were carried out in connexion with plaice-egg surveys during the period January to March. Since these waters are vertically homogeneous at that season, observations were confined mainly to surface temperature and salinity; a few sub-surface observations were made. H. M. S. "Truelove" and L. E. "Cliona", of the British and Irish Fishery Protection Services respectively, co-operated with the "Sir Lancelot" in these surveys.

A temperature and salinity survey of the water off the north-east coasts of England was made in June, in connexion with studies of the fat content of plankton.

In June and October, temperature and salinity profiles were made across the Southern Bight, and experiments were carried out on the employment of current-meters suspended from buoys. Trials made with the towed electrode apparatus, kindly lent by the National Institute of Oceanography, gave encouraging results.

The "Ernest Holt" worked the West Bear I. section in March, May, September, and November. In connexion with studies of organic production near the ice edge east of Bear I., several hydrographic sections approximately normal to the ice edge were worked during the year. In the earlier months, operations were confined to the deeper water between the Bear I.—Spitsbergen Bank and Central Bank. As the ice retreated, they were carried further northward on to the bank. The most northerly section ran eastward from Edge I. in about 78° N. On all sections, observations of salinity, temperature, dissolved oxygen, and inorganic phosphate were made. Observations bearing on the relationship between water temperature and cod distribution were made in the eastern Barents Sea in November and December.

A review of the available hydrographic data bearing on the warming of northern regions was undertaken. The temperature of the deeper water entering the North Polar basin north-westward of Spitsbergen was also examined. Evidence was obtained that the volume of warm water brought into northern seas by the currents at the extremities of the Gulf Stream system undergoes large changes.

The routine collection of surface temperature and salinity observations in the waters round the British Isles was maintained. Observations on the route Great Yarmouth—Rotterdam came to an end, and a fresh series was begun across the northern North Sea, between Leith and the entrance to the Skagerak. The monthly series of temperature and salinity observations on the Flamborough Line were obtained as hitherto.

National Institute of Oceanography.

The flow of water through Dover Strait has been recorded continuously since February 1953. The tidal currents are the most prominent feature of the records, and since their magnitude is known from other measurements they provide a means of calibration. After the tidal currents have been eliminated, the records show the drift current which has been correlated with

the local wind and the slope of the sea surface at the eastern end of the Channel. The results have been used to obtain evidence of the dependence of wind stress on wind speed and of the dependence of the friction at the sea bottom on the speed of the current. The strongest current so far recorded was on 1. November 1953, when the north-east-going drift reached a peak value of 2 knots and was sufficient to prevent any south-westerly flow on two successive ebb tides.

The programme of routine measurements of water movements from lightvessels round Britain has been continued; summaries of the measurements have been sent to the International Council and to laboratories interested in the work.

Wave records have been obtained throughout the year from the Ocean Weather Ship "Weather Explorer" on Station I; preliminary examination indicates that the processes of wave generation are more efficient in deep water than in a coastal region. The highest waves measured were up to 51 feet on 16. November. Further progress has been made towards following the path of a storm from seismic measurements on shore.

Some progress has been made in the theoretical and experimental research on oceanic circulation, and preparations have been made for attempts to measure deep-water movements between Britain and the Azores.

The Institute has set up its new laboratory at Wormley, near Godalming, Surrey (near Witley station, half-way between London and Portsmouth).

Marine Biological Laboratory, Plymouth.

Monthly cruises have been made in R. V. "Sabella" or M. F. V. "Sula" to the international station E_1, and data for temperature, salinity, silicate, phosphate, and total phosphorus have been obtained.

Department of Oceanography, Liverpool University.

Surface temperatures and salinities were observed three times per week at each of nine stations in the Irish Sea. The salinities were determined by a potentiometric method.

The spectrophotometric determination of the trace-elements in sea water was actively pursued.

Professor PROUDMAN has published a book entitled "Dynamical Oceanography".

Mr. FAIRBAIRN has determined the semi-diurnal tides along the equator in the Indian Ocean by a direct calculation from the observed tides on the coasts of that ocean north of the equator.

Finland

(G. GRANQVIST).

Hydrographical material was collected from 22 fixed stations (of which 3 are occasional stations in the inner part of the Archipelago), 8 lightships, 13 tidal gauge stations, 13 tidal pole stations and ice observations from about 70 ice stations, following the same programme as previously. Surface observations of temperature and salinity were made from liners on the Helsingfors—Copenhagen—(Antwerp) line. Hydrographico-chemical work during cruises was carried out in the Archipelago.

France

(P. DESBROSSES).

La frégate "Aventure" de la Marine Nationale a exécuté dans le courant de l'été, sur les bancs de Terre-Neuve et entre Terre-Neuve et le Groënland, 135 stations hydrologiques atteignant une immersion de 500 mètres.

L'aviso garde-pêche "Ailette" de la Marine Nationale a effectué en Avril—Mai, en Manche et Mer d'Irlande, 32 stations hydrologiques limitées à 100 mètres d'immersion, et en Août—Septembre, en Mer du Nord, 10 stations limitées à 80 mètres.

Les escorteurs de la 2ème Région Maritime ont procédé en Mai, Août et Septembre à l'exécution systématique d'un programme trimestriel de mesures en surface s'étendant jusqu'à environ 300 milles à l'ouest de la Bretagne, à titre de contribution française à l'établissement des cartes publiées régulièrement par le Conseil International de Copenhague.

L'aviso "Elie-Monnier" de la Marine Nationale a effectué en Décembre un nouveau relevé du profil de la Méditerranée entre Alger et Toulon, comportant 10 stations poussées jusqu'au fond de la mer.

Les bâtiments précédents et nombre d'autres ont effectué de nombreux enregistrements bathythermographiques entre 0 et 150 mètres. En outre des mesures ou des enregistrements systématiques de la température superficielle de la mer sont faites à bord de nombreux bâtiments de tous types.

Les frégates météorologiques, stationnées au point K, ont procédé à des stations hydrologiques bi-mensuelles.

Les sections hydrologiques en Manche ont été poursuivies par le laboratoire de l'Institut des Pêches de Boulogne en collaboration avec les Services du Ministère de l'Agriculture et des Pêches de Grande-Bretagne.

Des stations fixes mensuelles ont été effectuées dans les régions de Boulogne, Roscoff, La Rochelle, Arcachon, St-Jean-de-Luz, à bord des vedettes garde-pêche de la Marine Marchande.

Les embarquements sur les navires de pêche: chalutiers, thoniers, sardiniers ont permis de prendre températures et salinités depuis les lieux de pêche d'Utsire et du Dogger Bank, en Manche orientale et jusqu'au large du Golfe de Gascogne (3 sorties à bord des thoniers).

Une carte de pêche provisoire du Banc Hamilton, à la côte du Labrador, a été publiée en 1953, d'après les sondages du navire océanographique "Président Théodore Tissier".

Germany

(G. Böhnecke).

Deutsches Hydrographisches Institut Hamburg.

Research Cruises.

From 2. till 27. March 1953 investigations into the relations between wind, current, distribution of the water bodies and biological conditions were made at short intervals in the southern North Sea with "Gauss". These are similar to those taken in March 1952 (see Böhnecke, Joseph, Dietrich, Kalle, Krey, Bückmann in Ber. Deutsch. Wiss. Komm., **13**, 89—174, 1953). During this cruise, temperature, salinity, turbidity, chlorophyll content, intrinsic fluorescence and yellow matter were ascertained. At the same quantitative determinations of the total plankton and albumen content in plankton (carried out by the "Institut für Meereskunde" of Kiel University) as well as of fish eggs and larvae (by the "Max-Planck-Institut für Meeresbiologie", Wilhelmshaven) were made. In addition the current was measured over 15 days with 10 self-recording paddle-wheel current meters at 6 positions near the surface and near the bottom, and from 2 anchored stations. The variation, with time, of the vertical distribution of the current and the hydrographic stratification over 25 hours were observed.

During another cruise with "Gauss" from 4. till 22. August 1953 to the central and northern North Sea, the relations between the summer density discontinuity layer and the vertical distribution of turbidity, the chemical factors, the echo scattering layer and the distribution of plankton were studied, as in August of the preceding year. The determination of the total plankton and albumen content in plankton were carried out by members of the "Institut für Meereskunde" of Kiel University, and that of the composition of plankton by the "Institut für Seefischerei der Bundesforschungsanstalt für Fischerei", Hamburg.

Lightships.

1. Positions.

The present positions of lightships from which routine observations are taken, are as follows:—

	Lat. N.	Long. E.
"S 2" (withdrawn since 10. XI. 1953)	54°00.5′	3°32.0′
"P 8"	54°16.0′	7°11.5′
"P 12"	54°00.0′	7°51.5′
"Elbe 1"	54°00.0′	8°10.7′
"Weser"	53°51.6′	7°53.2′
"Fehrmarnbelt"	54°36.0′	11°09.0′
"Kiel"	54°29.9′	10°17.3′
"Flensburg"	54°50.3′	9°53.8′

2. Programme of observations.

On board "S 2":—

(a) current measurements by cross-shaped log (Stromkreuz) every two hours;
(b) continuous current measurements by vertical log;
(c) daily measurements of surface temperature and salinity at 0800;
(d) every three or four days, at high and low water, surface temperature and salinity measurements on station;
(e) every Saturday at 0800, one series (temperature and salinity) at a depth of 5, 10, 15, 20, 25, 30, 35, and 40 m., and at the bottom with the Pettersson sampler.

On board "P 8", "P 12", "Elbe 1", and "Weser" as under (a), (c), (d) at "S 2".

On board "Fehmarnbelt":—

(a) current measurements by cross-shaped log (Stromkreuz) every four hours;
(b) daily at 0800, one series (temperature and salinity) at 0, 5, 10, 15, 20, 25 m. depth and at the bottom.

On board "Kiel" and "Flensburg":—

(a) current measurements by cross-shaped log (Stromkreuz) every four hours;
(b) daily at 0800, measurements of surface temperature and salinity.

3. Publication of observations.

The observations made during the three years 1948, 1949 and 1950 were published in the form of Year Books. (Beobachtungen auf den deutschen Feuerschiffen der Nord- und Ostsee, in the series: *Meereskundliche Beobachtungen und Ergebnisse* Nr. 1—3. Deutsch. Hydr. Inst. 1953).

Liners.

Surface samples were collected 6 times per month from liners on the route Hamburg—Hull.

Biologische Anstalt Helgoland.

During four biological research cruises with the research cutter "Uthörn" from March till July 1953 in the German Bight and south-western North Sea hydrographic surface observations were carried out. From 19. February to 6. December 1953 the surface temperature was daily determined at Helgoland and sometimes the salinity at the surface. Near List on the Isle of Sylt the surface temperature was measured daily and the salinity at the surface at intervals of 14 days.

Institut für Meereskunde der Universität Kiel.

In 1953 the Institut für Meereskunde, during routine cruises with its research cutter "Südfall", carried out a series of oceanographical measurements in Kiel Bay and, in addition, current measurements with laid out paddle-wheel current meters and electrically recording current meters. These were also used in the waters surrounding Fehmarn.

Institut für Seefischerei der Bundesforschungsanstalt für Fischerei.

In connexion with the investigations made in the interest of fisheries, the fishery protection vessels "Frithjof" and "Meerkatze" carried out hydrographic

investigations on the fishing grounds of German fishermen. Near Iceland there have been 28 stations, in the North Sea and the English Channel 70 stations.

Iceland

(U. Stefánsson).

Cruises. During February, March and April about 40 hydrographic stations were worked off the south and the south-west coast of Iceland.

In May some 50 hydrographic and BT stations were worked, mainly off the south and south-west coast, but a few in the area between Kögur and Langanes on the north coast.

In June extensive hydrographic work was carried out off the north-west and the north coast, in the area between Iceland and Jan Mayen and off the south-east coast of Iceland.

In August investigations in Faxa Bay were repeated, and in September serial observations were begun off the north coast. These serial investigations have since been repeated once every month.

Sea-surface temperature measurements were continued by means of thermographs installed in three ships, one running from Reykjavik to New York and on two coastal steamers.

Ireland

(A. E. J. Went).

During 1953 hydrographic observations were limited to the taking of surface temperatures at the "Conigsbeg" lightship in continuation of the work done in previous years, and to a single cruise on the corvette L. E. "Cliona" in the Irish Sea. The latter cruise was carried out in conjunction with the British Ministry of Agriculture and Fisheries in connexion with a plaice research programme, and the details of the observations so taken were transmitted to the Lowestoft laboratory for co-ordination with the information collected by the British research vessel "Sir Lancelot".

Netherlands

(J. W. Termijtelen).

Koninklijk Nederlands Meteorologisch Instituut, Oceanografische Afdeling.

1. Once a week surface temperature measurements and salinity observations from liners on the routes Hoek van Holland—London and Ijmuiden—Hull.

2. Surface temperature measurements and continuous current measurements from the lightships "Goeree", "Texel", "Terschellingerbank" and "Noordhinder". Extensive hydrographic observations at various depths from the "Texel" in the middle of March and from the "Noordhinder" about the beginning of October.

3. Short hydrographic cruises in the southern North Sea and Waddensea areas.

4. Hydrographic observations from the Netherlands Weather Ships: surface observations on their routes to and from stations J and A and station Dogger Bank; subsurface observations on station J during June 1953.

Rijksinstituut voor Visserijonderzoek.

1. Daily salinity measurements from the lightships "Goeree", "Texel", "Terschellingerbank" and "Noordhinder".

2. Hydrographic observations on fishery research cruises in the southern and central North Sea.

Rijkswaterstaat.

1. Hydrographic observations in estuarine waters.
2. Wave measurements in coastal waters.

Zoölogisch Station (Den Helder).

Hydrographic investigations in the Waddensea area.

Norway

(J. Eggvin).

Directorate of Fisheries, Institute of Marine Research.

Cruises. During 1953 16 cruises were undertaken by "G. O. Sars", "Johan Hjort", "Krill" and 4 chartered vessels.

Hydrographic investigations were carried out in Norwegian coastal waters each month of the year; in the Barents Sea in February, March, April, August, September, and October; in the Norwegian Sea in January, May, June, July, November, and December; in the Skagerak in May, June and August, and off West Greenland in July and August.

Current measurements were made during March and April in the Lofoten area.

Fixed Oceanographic Stations. Routine observations of salinity and temperature from surface to bottom were continued during the year at the oceanographic stations Lista, Utsira I and II, Sognesjøen, Lusterfjorden, Ona, Eggum, and Skrova.

Sea Surface Thermograph Service. Thermograph records were obtained from 7 liners running the following routes from Bergen;—(a) to Newcastle, (b) to Rotterdam, (c) to New York, (d) to Kirkenes (east Finnmark), (e) to Oslo.

Salinity samples were collected in fixed positions on these routes. Thermograph records were also obtained from a collier running between Advent Bay, Svalbard, Lat. N. 78°15′, Long. E. 16°04′, and different ports in Norway during the summer and from a liner running between Southampton and the Canary Islands during the winter.

Flødevigen Sea-Fish Hatchery, Arendal.

With the help of "G. M. Dannevig" hydrographic investigations were carried out in Skagerak along the Arendal—Hirtshals section in January, February, March, May, June, August, September, and November; in the Oslofjord and fjords of southern Norway in March, May, June, September, October, and December, and in the coastal waters between Kristiansand and Egersund in June, November and December.

The Geophysical Institute of the University of Bergen.

The M/S "Armauer Hansen" carried out regular investigations along the Sognefjord section (from Bergen about 280 nautical miles towards the north-west) in May, June, and August, and in the fjords of western Norway in February, April, June, August, October and December.

Weather Ship Station "M".

The regular investigations at Weather Ship Station "M" (Lat. N. 66°, Long. E. 2°) were continued (S/S "Polarfront I" and S/S "Polarfront II"). These investigations include 6 stations per week, of which one station to 150 m., four stations to 1000 m. and one station to about 2500 m. depth.

In addition sea surface thermograph records at the same station and between this station and Bergen have been continued.

Sea surface samples have been collected in fixed positions between station "M" and Bergen.

Portugal

(A. M. Ramalho).

No hydrographical observations were made in connexion with the Hydrographical Committee during 1953.

Scotland

(John B. Tait).

Hydrographic investigation from Scottish research ships was maintained in the northern North Sea and the Faroe—Shetland Channel region throughout practically the whole of 1953, and included the customary serial temperature and salinity observations, oxygen and phosphate determinations, and drift-bottle liberations. Iceland and west Scottish waters were also visited. Concentrated hydrographical-cum-biological surveys were conducted at various times west of Orkney to Cape Wrath, east and south-east of Fair Isle, including the Moray Firth, in the area around the Fladen Ground, and off the mid-east coast of Scotland.

Spain

Instituto Hidrografico de la Marina (F. Balén).

Tidal observations for reduction of soundings were carried out in the following areas:—

Mediterranean Sea:	Barcelona, Sagunto.
Atlantic Ocean:	Estuaries of the rivers Arosa, Marín, and El Ferrol del Caudillo.
Cantabrian Sea:	Bilbao.
Canary Islands:	Tenerife.
West coast of Africa:	Villa Bens, River Sakiet, Médano de Santiago, Villa Cisneros, Puerto Rico.

Tidal observations for obtaining harmonic constants were carried out in Puerto Rico (west coast of Africa).

Current measurements were carried out on the following points:—

39°38.8′ N.,	0°11.9′ W.,	Sagunto Harbour.
23°25′ N.,	16°06′ W.,	West coast of Africa.
26°39.5′ N.,	13°47.7′ W.,	
27°58.5′ N.,	12°53.5′ W.,	
26°34.5′ N.,	13°57.5′ W.,	
26°43′ N.,	13°41′ W.,	
23°51′ N.,	15°54′ W.,	

Simultaneous current observations were carried out at 5 different places in the estuary of the river El Ferrol del Caudillo.

Instituto Español de Oceanografía
(R. García-Rodríguez).

Oceanographical cruises with "Xauen" were undertaken in the West Mediterranean Sea and Alborán Sea during the spring season. Other cruises were carried out in July and first half of August in the Alborán Sea, North Africa and the Sea of Cadiz as far as Cape St. Vincent. In the second half of August and September many radial profiles were undertaken in the Cantabrian Sea and to the north-west of Spain.

Determinations of temperature, salinity, oxygen and phosphate were made on all these cruises.

Physical and chemical factors were determined weekly at the coastal stations of San Sebastián, Santander, Vigo, Málaga, Barcelona and Palma de Mallorca.

Sweden

(B. Kullenberg).

The two permanent sections P and M were worked in January and February.

Regular observations of temperature, salinity, and currents were carried out at Bornö Station and at 10 Swedish lightships.

Hydrographical investigations of the fjords of the Swedish west coast were made every third month.

During a cruise in the Baltic in March the chief interest was focussed on the hydrographical conditions in the deep basins.

Observations of temperature and salinity were carried out on a biological cruise to Iceland in May.

A hydrological cruise was made in the Baltic and the Gulf of Bothnia in July.

Plankton Committee.

1953

By Trygve Braarud

Belgium

(E. Leloup).

The following observations have been made:—

1. from the lightship "West-Hinder":—
   (a) a weekly plankton sample (taken at the surface—filtering of 100 l. water—net silk No. 25) for phytoplankton;
   (b) a weekly plankton sample (taken vertically—from the bottom to the surface—net silk No. 3) for zooplankton.
2. from the school-ship "Commandant Fourcault":—
   Stations B 13, 14, 15, and 16 of the Line Gravelines—Deal and Station B 22 off the Belgian coast:—
   once a month (from July till November) a plankton sample (taken vertically—from the bottom to the surface—net silk No. 3) for zooplankton.

Denmark

(Jul. Grøntved).

1. Throughout the year an investigation has been carried out for measuring the production of organic matter in the Store Bælt, where "Halsskov Rev" L.V. was used as a station for the experimental work. At certain intervals the amount of matter produced by the phytoplankton has been determined by means of radio-active Carbon (^{14}C).

2. Investigations on the food of the herring in the waters round Bornholm, which have been carried out for many years, have been continued. In the Bløden Ground area in the southern North Sea a similar investigation has been initiated.

3. During the cruises of "Dana", "Jens Væver", and "F. V. Mortensen" in the southern North Sea samples were collected of zooplankton and of phytoplankton.

4. Phytoplankton material from the waters west of Greenland has been worked up. The samples were collected by "Dana" and "Ad. S. Jensen" in 1950 and 1952 and by the Norwegian ship "Uran" in 1948.

5. On "Dana's" cruise in West Greenland waters phytoplankton was collected in certain places and zooplankton all along the ship's route.

6. In the area north of the Faroes zoo- and phytoplankton samples were collected during "Dana's" cruise.

7. A collection of phytoplankton samples has been started in the Fylla Bank area in order to obtain information on the seasonal variation of the plankton in this area.

8. At Narssaq, SW. Greenland, an investigation has been started for determining the amount of organic matter produced by the phytoplankton in this place for a year. The measurements are made by means of radio-active carbon.

9. The following visitors have been working at the Plankton Laboratory: Professor M. Dunbar, McGill University, Montreal, who finished work on the Amphipod fauna of Ungava Bay (eastern Arctic of Canada); Dr. G. Baxter Deevey, Bingham Oceanographic Laboratory, Yale University, was working on zooplankton samples collected off the coast of Peru.

England

Lowestoft (R. S. Wimpenny).

Barents Sea.

On six cruises between March and October the hypothesis was tested of an advancing plankton "front" as the ice edge receded northwards east of Bear Island and Hope Island. Of six lines of stations running out at right angles to the edge of the bank, three or four were worked per cruise. Phytoplankton was first met as a dense flowering at the ice edge in May and thereafter there were indications that it followed the retreating ice and was succeeded by the zooplankton. For the whole area investigated between May and October the mean standing crop was about 9 grams dry weight under a square metre or about 45 milligrams per cubic metre. In July measurement showed that 1 % of green light penetrated to 70 metres in the Barents Sea.

Plankton sampling on the line to 75 miles west of Bear Island was continued on three cruises, particular attention being paid to the deeper water layers down to 600 metres off the edge of the bank. Over this deep water the zooplankton was particularly rich in May.

Flagellate counts were taken in June in the Barents Sea as far north as 76°N. and in water as cold as 1.6°C. and also during the return voyage into the North Sea. Samples from the coldest waters had as many flagellates as some samples taken south of 60°N., although these latter tended on the whole to have higher numbers.

Atlantic.

Vertical hauls with coarse silk nets from 100 metres to the surface have continued from Ocean Weather Ships at Stations "Item" and "Jig" in the eastern North Atlantic.

North Sea.

The usual monthly Flamborough Line stations were carried out from April to September as well as a cruise regularly made off the NE. coast in June in order to relate the fat content of the plankton to the subsequent condition of the herring. Plankton hauls were also made in April, May and June over the Northumberland herring grounds.

On the Flamborough Line the general level of zooplankton has been maintained but the decrease in the standing crop of phytoplankton noted in previous years has continued. *Calanus finmarchicus* which has shown an increase in numbers during the period 1950—53 over the previous period 1946—49, reached its highest maximum in June 1953. Its increased importance would appear to be responsible for the highest fat weight and dry weight values observed for the comparable months of June, July, and September since these values were first calculated in 1947.

The June cruise of the NE. coast has shown a level of dry weight per cubic metre of Hensen-net plankton only exceeded in 1952 during the period from 1947. The weight of fat per cubic metre was, however, higher both in 1952 and 1947.

The observations over the Northumberland herring grounds revealed a late plankton outburst and this was probably responsible for the poor fishing in April and May.

Irish Sea.

Four extensive surveys covering much of the area between Lands End and the Solway Firth were carried out between late January and the end of March to locate the plaice spawning areas in the Irish Sea. Spawning had just begun at the beginning of the surveys and was still in full swing at their termination. Four spawning areas were located.

Plymouth (F. S. Russell).

Work has continued during the year on the collection of species-pure cultures of marine phytoplankton organisms, and the systematic study of the Chrysophyceae and peridinians in which Dr. Mary Parke and Miss D. Ballantine are engaged.

Dr. D. P. Wilson and Mr. F. A. J. Armstrong have made further experiments on the effects of different sea waters on the development of sea urchin larvae.

Mr. P. G. Corbin has continued the regular observations on the macro-plankton caught with the 2-metre ring-trawl off Plymouth. The quantities remain at the low level prevailing in recent years.

A monograph on the medusae of the British Isles by Mr. F. S. Russell has been published during the year.

France

Institut des Pêches, Paris (J. Fleury).

Le service "Plancton" poursuit les triages et le classement du phytoplancton et du zooplancton provenant de pêches faites:—

(a) au cours des croisières du "Président Théodore Tissier";
(b) à bord des frégates météorologiques françaises stationnées au point K ("Le Brix", "Le Verrier") et des avisos garde-pêches "Ailette" et "Aventure";
(c) par les laboratoires côtiers de l'Institut des Pêches, en vue de l'ostréiculture et des conditions des lieux de pêche de la sardine (Entrée de la Manche, côtes de Bretagne, côte Basque), du thon (Grande Sole, Cap Finisterre, San Miguel) et de divers autres poissons comestibles.

Une partie du matériel recueilli et trié est étudiée au laboratoire.

Les "espèces indicatrices" et "holoplanctoniques" sont particulièrement recherchées.

Nos études ont porté plus spécialement sur les sujets suivants:—

(a) plancton du Plateau Continental Atlantique (Entrée de la Manche et Mer d'Irlande—campagne du "Tissier"—(Juin, Juillet et Août 1952) —lieux de pêche du thon—(Petite et Grande Sole));
(b) contribution à l'étude des formes larvaires de poissons en provenance des campagnes du "Président Théodore Tissier" (Katsuwonides, Myctophiides, Clupéidés, Thonidés);
(c) étude des oeufs et larves de poissons capturés à bord de l'aviso "Ailette" en 1953 à l'entrée occidentale de la Manche;
(d) contribution à l'étude de la nourriture de la sardine du Golfe de Gascogne;
(e) contenus stomacaux d'anchois;
(f) étude du plancton du Bassin d'Arcachon à différentes époques de l'année;
(g) contenus stomacaux des huîtres de cette même région; recherches particulières sur les espèces planctoniques favorables ou nuisibles aux huîtres.

Germany

(J. Krey).

Biologische Anstalt Helgoland.

In connexion with research on fishfry in the SE. North Sea vertical plankton hauls were carried out during summer for the identification of water masses (Aurich).

Institut für Seefischerei, Hamburg.

A study has been made of the relation between the vertical distribution of plankton, the temperature discontinuity layer and a zone of high turbidity. This relation is of importance for the vertical distribution of the herring. The following series of samples have been collected:—

(a) from June to September 617 plankton samples were taken over the whole North Sea;
(b) during the same period the "Meerkatze" collected 165 plankton samples at 22 stations in

the area of the most intense herring fisheries. The plankton was obtained by filtration at 1—2 l. through the Hentschel filtering apparatus;

(c) on the cruise of the "Gauss" during August 1953 plankton samples were taken along two sections in the northern North Sea, one running S.—N. and one W.—E. The number of samples amounted to 398, collected in 65 vertical series. Again the Hentschel filtering apparatus was used (Lundbeck, Wulff).

Max-Planck-Institut für Meeresbiologie, Wilhelmshaven; Fishery-biological department.

1. Microplankton samples obtained on the cruise of the "Gauss" in the S. and SE. North Sea were examined, together with similar samples from the coast of eastern Frisia.
2. During the whole year daily surface samples of t°, S $^0/_{00}$, and plankton were taken in the closed seawater biotope (the former naval harbour of Wilhelmshaven). Besides these, a series of vertical samples was collected in the same area during spring. The latter series was also analysed for O_2, pH, PO_4''' and NO_2' (Bückmann, Gillbricht).

Institut für Meereskunde, Kiel.

1. The following plankton observations were made during the cruises of the "Gauss":—
   (a) in the S. and SE. North Sea (German Bight) studies of plankton production have been made together with observations of the regional distribution of phytoplankton, zooplankton and seston;
   (b) along two sections in the N. North Sea a study was made of the relation between turbidity and the phytoplankton layer in connexion with the hydrographic situation.
2. In the Kiel Bight observations were carried out on the distribution of the larvae of polychaetes and echinoderms in relation to the hydrographic situation.
3. In the Iceland area the quantitative relation between phytoplankton, zooplankton and seston was studied (Krey).

Ireland

(A. E. J. Went).

No plankton work has been done during 1953.

Netherlands

(B. Havinga).

The plankton work in 1953 comprised fish eggs and larvae only and is so closely related to the submersal research work in the southern North Sea that it is reported as a whole in the contribution to the North Sea Sub-Committee (see p. 9).

Norway

Fisheries Directorate, Bergen (K. F. Wiborg).

1. Fish eggs and larvae were collected with Clarke-Bumpus plankton samplers in the coastal waters of northern Norway in May and June. As in 1952, cod larvae were numerous. Even late in season numbers were high, and schools of cod were still arriving in the spawning area at the end of April.

Preliminary investigations seem to indicate that the size of the year-classes of cod may be related to the number of larvae about one month after hatching.

Herring larvae were scarce compared to 1952. Capelin larvae were also scarce, their number and limits of distribution being the same as in 1952.

Plankton sampling with the Nansen net has been continued at the permanent hydrographical stations at Sognesjöen, Ona, Eggum and Skrova. Monthly means have been worked out for the plankton volume in the total water column from bottom to surface for the five-year period 1949—1953. In 1953 volumes were greater than the 5-year average at Sognesjöen in April, at Ona in May, and at Skrova in June and October, below the average at Ona from June to November, at Eggum in April and June, and at Skrova in August. No salps were observed in 1953.

The collection of plankton at Weather Station "M" has been extended. In addition to the ordinary day programme with vertical Nansen-net hauls from 100—0 m. once a week and a complete station from 2,000 m. to surface once a month, the same programme is now also carried out during night. Vertical hauls 25—0 m. and horizontal surface hauls with a metre net are also taken weekly day and night. The purpose has been to study the diurnal migration, and to catch the more swift-moving forms. In the upper 25 m. the night hauls were usually more rich, the vertical hauls especially in April and July, the surface hauls in March, July and September. The same feature was also seen in the 100—0 m. hauls, but is less pronounced. In the deeper layers the plankton volumes were most often smaller during night.

Oblique hauls with 1-metre and 2-metre nets were made during the cruise of "G. O. Sars" in sections across the coastal banks from North Cape to the banks off Trondheim in searching of spawning areas of commercial fish, especially haddock. Vertical hauls with the Nansen net, and water samples for phytoplankton were also taken on cruises in the Norwegian Sea and adjacent areas from May to July, and in the Barents Sea and the northern part of the Norwegian Sea in September.

All the zooplankton material is worked up continuously. A report on the zooplankton populations of the Norwegian Sea is in preparation

(K. F. Wiborg.)

2. A quantitative survey of the phytoplankton in the Barents Sea has been started. (G. Berge).

3. Investigations on the food conditions of the sprat have also been continued in some fjords south of Bergen from the end of May to the beginning of

August. The plankton was meagre in July compared with July of the previous year. A report on the work done in 1950—51 has been published.

(K. R. Gundersen.)

4. In the fjords and coastal waters from Oslo to Haugesund vertical hauls were made with a metre net in the period 28. May to 23. June in order to locate the spawning areas of the sprat.

(G. Dannevig.)

University of Oslo (T. Braarud).

I. Surveys and Taxonomical Work.

1. Quantitative phytoplankton surveys were undertaken on material from the following areas:—
   (a) The Norwegian Sea. Material collected during the "G. O. Sars" cruises in May—June, 1952 and 1953, mainly from the northern part. (Einar Ramsfjell).
   (b) North of Iceland. Samples from the summer of 1950—52, collected by the Icelandic research vessel. (Thorunn Thordardottir).
   (c) The poll Hunnebunnen in south-eastern Norway. Monthly samples from one year. (T. Braarud and Bjørg Føyn).
   (d) The Dramsfjord. The examination of one-year's material was completed. (G. Rytter Hasle and Bjørg Føyn).
2. The study of one-year's material of quantitative zooplankton samples from the Dramsfjord was continued. (F. Beyer).
3. Taxonomical work.
   (a) Taxonomical studies on coccolithophorids and dinoflagellates collected during the "Michael Sars" expedition 1910 were completed. (K. Ringdal Gaarder).
   (b) Taxonomical studies were carried out on material from the North Sea survey, May 1948. (K. Ringdal Gaarder).
   (c) The study of coccolithophorids by means of electron microscopy was continued. (T. Braarud, K. Ringdal Gaarder, P. Halldal, J. Markali, T. Næss, E. Paasche, E. Ramsfjell).
   (d) Electron microscope studies on *Exuviella baltica*. (T. Braarud, J. Markali and E. Nordli).

II. Experimental Work.

   (a) Studies on the effect of external factors upon rate of growth in *Ceratium* species and the size distribution at various temperatures in cultures and in nature. (E. Nordli).
   (b) Similar work on *Coccolithus Huxleyi* and on various dinoflagellate species were also carried out. (P. Bakken and G. Mjaaland).
   (c) Experiments aiming at obtaining bacteria-free cultures of marine phytoplankton organisms were continued. (Kjell and Kjellrun Baalsrud).

Scotland.

Aberdeen (J. H. Fraser).

The four research vessels of the Scottish Home Department continued to operate during the year, and collected plankton samples from the following areas:—

1952	
November/December	Northern North Sea and Faroe.
1953	
January	Central North Sea.
February	Faroe and Faroe—Shetland Channel, Clyde.
March	Fladen and north Scottish coasts, Faroe, Shetland.
April	Northern North Sea, east Scottish coast, Fladen, Faroe.
May	Fladen and Faroe—Shetland Channel.
June	Fladen, northern North Sea, Faroe, Iceland, Rockall.
July	Moray Firth, Fladen, north Scottish coast.
August	Faroe, Shetland, west Scottish coast, Rockall.
September	Northern North Sea, Fladen, Moray Firth.
October	East Scottish coast, Moray Firth, Minch.
November	Fladen, northern North Sea, west Scottish coast.
December	East Scottish coast.

The objects of the sampling during 1953 were similar to those of previous years, special attention being paid to the general distribution of plankton and to the indicator species in particular (J. H. Fraser); to the fish eggs and larvae, especially haddock and herring (A. Saville); plankton relationships on the herring grounds and in connexion with the productivity of the sea in Fladen and neighbourhood (J. H. Steele and T. Lovegrove). The feeding habits of larval herring in relation to the light factor have been studied (R. N. Bhattacharyya), and a series of samples collected by H.M.S. "Challenger" west of the English Channel have been examined (J. H. Fraser). Some phytoplankton cultures are being maintained for use in assessing the growth promoting or growth inhibiting properties of organic substances extracted from sea water (R. Johnston).

Millport (Sheina M. Marshall).

Mr. Droop has isolated several strains of neritic flagellates (Chrysophyceae, Cryptophyceae, Chlorophyceae) in bacteria-free culture and grown them successfully in completely defined media with a view to the identification of growth requirements, among which may be mentioned Cobalamin (B_{12}) and Thiamine (B_1) as being commonly needed by Chrysophyceae.

Dr. Orr and Miss Marshall continued their work on the feeding and digestion of *Calanus finmarchicus*, using radioactive phosphorus as a source of phosphorus for the food cultures. The percentage digested is high (at least of the phosphorus-containing fraction). On the whole more is taken and more digested of diatom than of flagellate cultures. The quantity of water filtered in a day varies greatly and falls off in very high food concentrations.

Dr. Barnes has studied size changes in barnacle cyprids and Dr. and Mrs. Barnes have found that copepodite stage V *Calanus* can be separated by various measurements into two roughly equal groups corresponding to male and female but that the differences are population differences only, and cannot be used for identifying individuals.

Edinburgh (K. M. Rae).

The Continuous Plankton Recorder survey of the North Sea and the western approaches to the British Isles was continued by the Edinburgh Laboratory of the Scottish Marine Biological Association during 1953. The scope of the programme was similar to previous years. Again the Association is deeply indebted to the captains, officers and crews of the weather-ships and commercial vessels of many countries who co-operated so generously in the work.

In all, some 37,000 miles of tow were taken on the following routes:—

	Records	Miles
Hull to Rotterdam	10	900
Hull to Hamburg	11	2,800
Hull to Skagerak	9	3,000
London to Stockholm	4	800
Leith to Skagerak	18	7,400
Leith to Lerwick	9	1,350
Pentland to Skagerak	7	1,750
Pentland to Weather Station "A"	5	1,950
Bergen to Weather Station "M"	12	3,400
Clyde to Weather Station "I"	14	4,850
Clyde to Weather Station "J"	11	4,350
Lizard to Weather Station "J"	7	3,050
Lizard to Weather Station "K"	4	1,450

The plankton taken on all these records has been worked up, and details are available to any worker who may be interested. Particular attention has been paid to the distribution of the larvae of benthic forms and of commercially important fish, and also to the effect of wind on the movements of "indicator species".

The intensive survey of the plankton off the Scottish coast during the summer herring fishery was continued in close collaboration with the Aberdeen laboratory of the Scottish Home Department. Many of the drifter skippers fishing from Fraserburgh assisted by taking some 1,000 samples with the Hardy Plankton Indicator and by giving such details as where they shot their nets and their catches. A further 400 Plankton Indicator samples were taken by the research ships of the Scottish Home Department. The contents of herring stomachs were analysed for comparison with the plankton available in the immediate vicinity. About 5,000 herring were weighed and measured, and certain facts such as the colour of their livers, the fullness of their stomachs, and the amount of fat stored round their caeca, were recorded.

Work on the vitamin A and fat content of various organs of the herring and of the plankton eaten by them was instigated in collaboration with the National Institute of Research in Dairying at Reading.

Spain

(J. Cuesta).

During the months of January and February a cruise was made with the "Xauen" in the Straits of Gibraltar and waters of the Moroccan Mediterranian during which many samples of plankton were taken in relation to the investigations which were made on the spawning and feeding of the anchovy and sardine. During the months of July and August a second cruise of the "Xauen" was made as in former years from the Straits to the Gulf of Biscay. The route was parallel to the coast along the parallel 43° N. as far as 11°30′ W. and along the meridians 8°, 6°, and 4° W. from the coast to 45°15′ N. making a total of 77 stations and two hauls were made at each station for phyto- and zooplankton.

In connexion with the cod fishing, plankton was taken during the fishery cruise of the "Vendaval" to Newfoundland and at the same time chemical and hydrological observations were made.

At the laboratory of the "Instituto de Investigaciones Pesqueras" of Vigo, samples of plankton have been studied which were caught by ships belonging to the tunny-fishery in the Gulf of Biscay, and the local phytoplankton has been sampled daily.

Sweden.

(Hans Höglund).

In connexion with herring investigations daily plankton samples with the Hensen net were collected from early March to early May within and outside the archipelago of northern Bohuslän.

Also in connexion with herring investigations a number of plankton collections have been made in the Baltic.

Publications.

Banse, K. und Lefevere, S.: Funde von *Branchiostoma lanceolatum* in der Kieler Bucht. Kieler Meeresforsch., **10**.

Braarud, T., Gaarder, K. Ringdal, and Grøntved, J.: The phytoplankton of the North Sea and adjacent waters in May 1948. — Rapp. et Proc.-Verb., **133**, Copenhague.

Gaarder, K. Ringdal and Ramsfjell, E.: A new coccolithophorid from northern waters. *Calciopappus caudatus* n. gen. n. sp. — Nytt Mag. f. Bot., 2.

Glover, R. S.: The Hardy Plankton Indicator and Sampler: A Description of the various Models in Use. Bull. Mar. Ecology, **4**, 26.

Gundersen, Kaare R.: Zooplankton investigations in some fjords in Western Norway during 1950—51. Fiskeridirekt. Skr., Ser. Havunders., **10**, No. 6.

Halldal, Per: Phytoplankton investigations from weather ship M in the Norwegian Sea, 1948—49. — Including observations during the "Armauer Hansen" cruise, July 1949. — Hvalråd. Skr., 38.

— and Markali, Joar: Morphology and microstructure of coccoliths studied in the electron microscope. — Observations on *Anthosphaera robusta* (Lohm.) Kamptner and *Calyptrosphaera papillifera* Halldal. — Nytt Mag. f. Bot., 2 (1954).

Hasle, G. Rytter: The reliability of single observations in phytoplankton investigations. — Ibid., 2.

— More on phototactic diurnal migration in marine dinoflagellates. — Ibid., 2.

Hope, Brigt: Floristic and taxonomic observations on marine phytoplankton from Nordåsvatn, near Bergen. — Ibid., 2.

Kay, H.: Eine Mikromethode zur chemischen Bestimmung des organisch gebundenen Kohlenstoffs im Meerwasser. Kieler Meeresforsch., **10**.

Krey, J.: Plankton- und Sestonuntersuchungen in der südwestlichen Nordsee auf der Fahrt der "Gauss" Februar/März 1952. Ber. Deutsch. Wiss. Komm., **14**.

— Beziehungen zwischen Phytoplankton, Temperatursprungschicht und Trübungsschirm in der Nordsee im August 1952. Kieler Meeresforsch., **10**.

Nordli, Erling: Salinity and temperature as controlling factors for distribution and mass occurrence of Ceratia. — Blyttia, 11.

Rae, K. M.: Continuous Plankton Records: List of Records, 1950—53. Bull. Mar. Ecology, **4**, 25.

Scotland.

(K. A. Pyefinch).

Addendum from page 28.

The resumption of work on the major scheme of salmon research was again delayed, but some progress was made in the necessary negotiations. A number of smaller projects were, however, carried out. Sea trout smolts were again tagged on the River Tweed and this programme was again extended to include salmon smolts. The results from the sea trout smolt experiments continued to be disappointing in comparison with the very encouraging returns obtained from the first of these experiments, carried out in 1951. Tagging of salmon (grilse) kelts and sea trout kelts was repeated on the Aberdeenshire Dee and it proved possible to tag many more fish than in 1952. A small tagging experiment was also carried out in the Tay, by the staff of the Tay Salmon Fisheries Co. Ltd., to acquire information on the movements of salmon within an estuary.

Work at the Brown Trout Research Laboratory, Pitlochry, has again largely been concerned with the results of the field fertilization experiments carried out in 1952. These experiments have provided interesting, though in some respects, puzzling results. Work on the biology of trout has been continued actively, particular attention having been paid to the investigation of the factors governing the choice of gravel beds for spawning and to studies of the spawning runs in Dunalastair Reservoir and in one of the spawning streams running into Loch Leven. Systematic work on the chemistry of bottom deposits has been begun and studies are also being made on such topics as the biology of important members of the bottom fauna, methods of weed control and the uptake of nutrients by aquatic macrophytes.